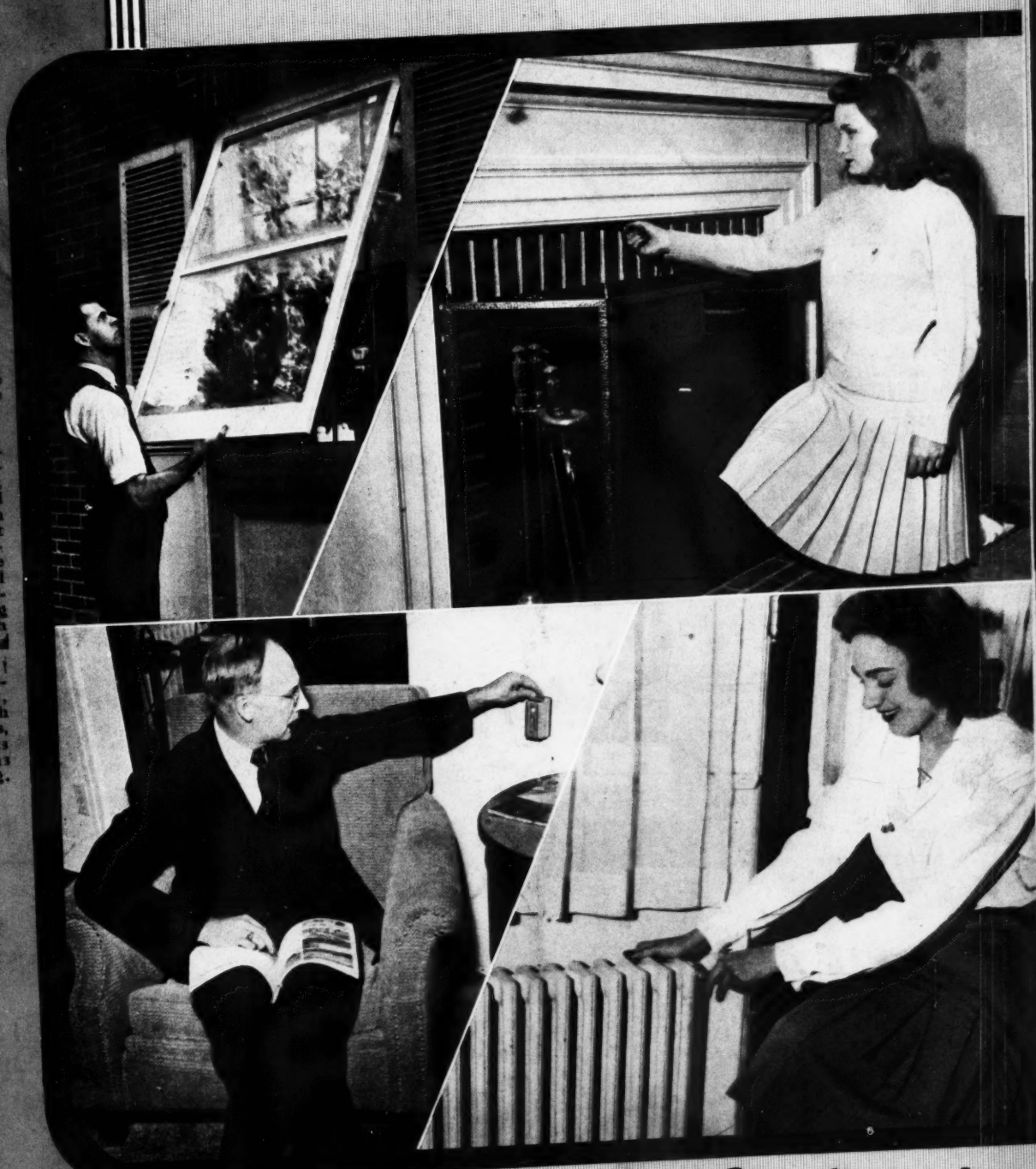
DOMESTIC ENGINEERING



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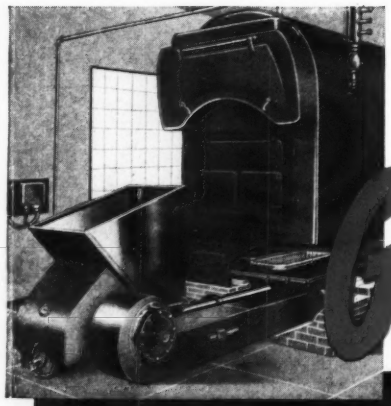


GET THIS CONVERSION CASH!

Winkler Industrial Model

THOUSANDS MUST SWITCH TO COAL... AND THAT'S A CASH OPPORTUNITY FOR YOU!

I'M CURTIS, WINKLER DEALER AT SALT LAKE CITY. JUST SOLD 62 OF THESE BIG WINKLERS TO THE GOVERNMENT.

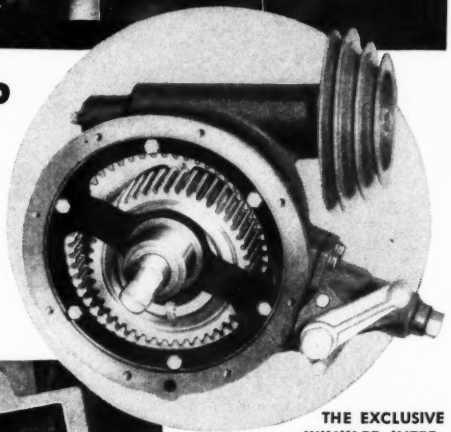
A once-in-a-lifetime chance to get into a business with orders literally *waiting to be filled!* Large competitive fuel users *must* convert to coal—and here's Winkler with the livest stoker proposition in the field.

If you've never sold a stoker before, you're still eligible, *because Winkler shows you how!* Look at this set-up—

A stoker that is really saleable, with everything that efficiency-minded management looks for. With Winkler's *"12 point demonstration"* you can *visibly demonstrate* it to be *more powerful—more economical*—and it's backed by an amazing record for long service-free life. *That's why Winkler sales have doubled every year!*

Winkler offers the one and only Inter-Planetary Transmission—so efficient and long-lived that it is the most outstanding design ever created for coal burning equipment. It provides *extra* power to crush obstructions which ordinarily mean a break-down. This, plus a host of other efficiency features, enables a Winkler to get the most heat out of the least fuel.

Get the Winkler Plan now—territories still open!



THE EXCLUSIVE WINKLER INTER-PLANETARY TRANSMISSION

Power enough to crush all ordinary obstructions! Even a piece of metal will not cause a break-down—the Locked Screw Safety Release disengages and resets the transmission until the obstruction is removed. *No shear pins to replace!*

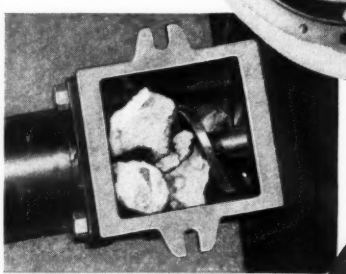


Illustration shows a large flint rock obstruction being broken into "stoker coal" size in the Crusher Block of a Winkler Stoker.

Winkler Commercial Model

The Winkler Franchise includes complete training by factory specialists . . . tied-in with a strong merchandising program and backed by National Advertising. Your business is *organized for success!*

WRITE TODAY!

FOR FRANCHISE INFORMATION

WINKLER

fully automatic STOKERS

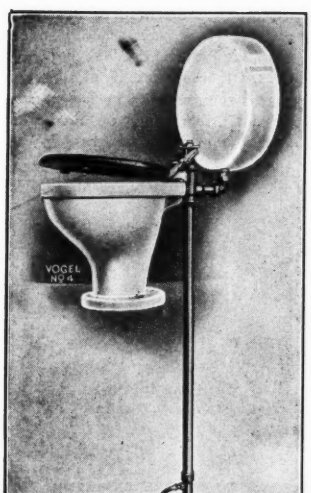
U. S. MACHINE CORPORATION • LEBANON, INDIANA

Every Plant LARGE OR SMALL MUST HAVE DEPENDABLE SANITARY FACILITIES

Where toilet rooms need frequent repairs and adjustment, valuable time is diverted from essential war work, and precious man-hours are lost. Under the stress of today's war effort, with its twenty-four-hour seven-day schedule, neither the largest industrial unit, which employs many thousands, nor the smallest shop cannot afford time out for repair or adjustment of sanitary facilities.

The VOGEL Number Four and Fourteen, shown here, are in service in shipyards, gun factories, chemical plants, steel mills, munition plants and many other places throughout the Nation where they are giving 100% service and acting as a valuable safeguard of employee health.

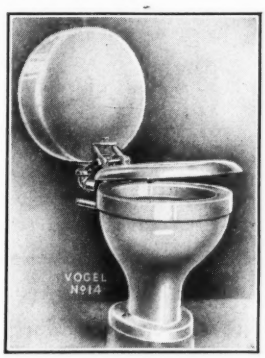
Also shown is the VOGEL Frost-Proof Hydrant. These hydrants will never freeze, even at sub-zero temperatures, and are recommended as a protection against fires resulting from bombing, possible acts of sabotage or other causes. Over 40,000 are now in use, many of which are protecting the lives of workmen in chemical and high explosive plants throughout the country.



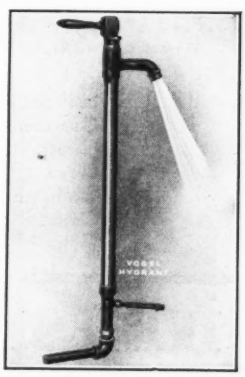
This fixture can be furnished with Vacuum Breaker and Ball Check Waste.

VOGEL NUMBER 4

Vitreous china bowl with top supply, painted white enameled drum type pressure tank, reinforced hardwood seat, union ell flush connection, lead waste connection, supply and flush valves assembled with 3 ft. 2 in. genuine wrought iron valve rod and casing.



Vogel Frost-Proof Hydrant for added fire protection in chemical plants and munition factories. Also for all outside installations. Over 40,000 now in use.



VOGEL NUMBER 14

Southern Outfit. Vitreous china top supply bowl, heavy brass flush valve, reinforced hardwood seat, painted white enameled drum shaped tank, union ell flush connection.

JOSEPH A. VOGEL COMPANY, WILMINGTON, DELAWARE

VOGEL PATENTED Products

652986

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January, 1943

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This issue continues Domestic Engineering's "annual review" tradition. Events this year are happening so rapidly, however, that the "history" part of this issue is held to a minimum; most of the space being devoted to analyses of our industry's present situation and reports of current developments.

Since most of the important influences of 1943 will flow from Washington, interviews with plumbing and heating division officials are published in association with articles on such topics as priorities, Controlled Materials Plan, prices, simplification and substitution, war housing, fuel conservation, etc.

WPB's action the past month in speeding the manufacture and distribution of stokers and coal burning stoves is significant because it illustrates the point that limitation of manufacturing often can be carried too far, to the actual harm of the war effort. Stokers (particularly industrial type) are urgently needed for the important oil saving objectives. If the present picture could have been foreseen in full perspective last year part of the present stress and strain could have been avoided.

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DOMESTIC ENGINEERING

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BROADER MARKET FOR WEISWAY MODEL V IN NEW GOVERNMENT HOUSING POLICY

★

Privately financed conversion of houses and buildings to create additional living quarters for war workers will now be granted A-A-4 priority ratings, the National Housing Agency has announced.

This puts private housing conversion projects on the same footing with publicly financed operations in obtaining materials. Besides the OPA has promised to give prior opinions as to rents which may be charged for privately converted units. For details concerning these important developments we suggest you consult your local F. H. A. or financing agencies.

These two steps will clear the way for a large amount of remodeling and conversion under private auspices to meet the tremendous need for more living quarters. More important to plumbers, *it means a greatly broadened market for plumbing equipment through the regularly established channels.*

Weisway Model V Cabinet Showers meet the urgent need for bath facilities in new as well as remodeled housing. These dependable, leakproof Cabinets actually contain less critical material than permitted under WPB regulations, provide convenient, healthful bathing facilities in small floor space.

Weisways have always been sold exclusively through the regular wholesale and retail plumbing outlets. We offer our fullest co-

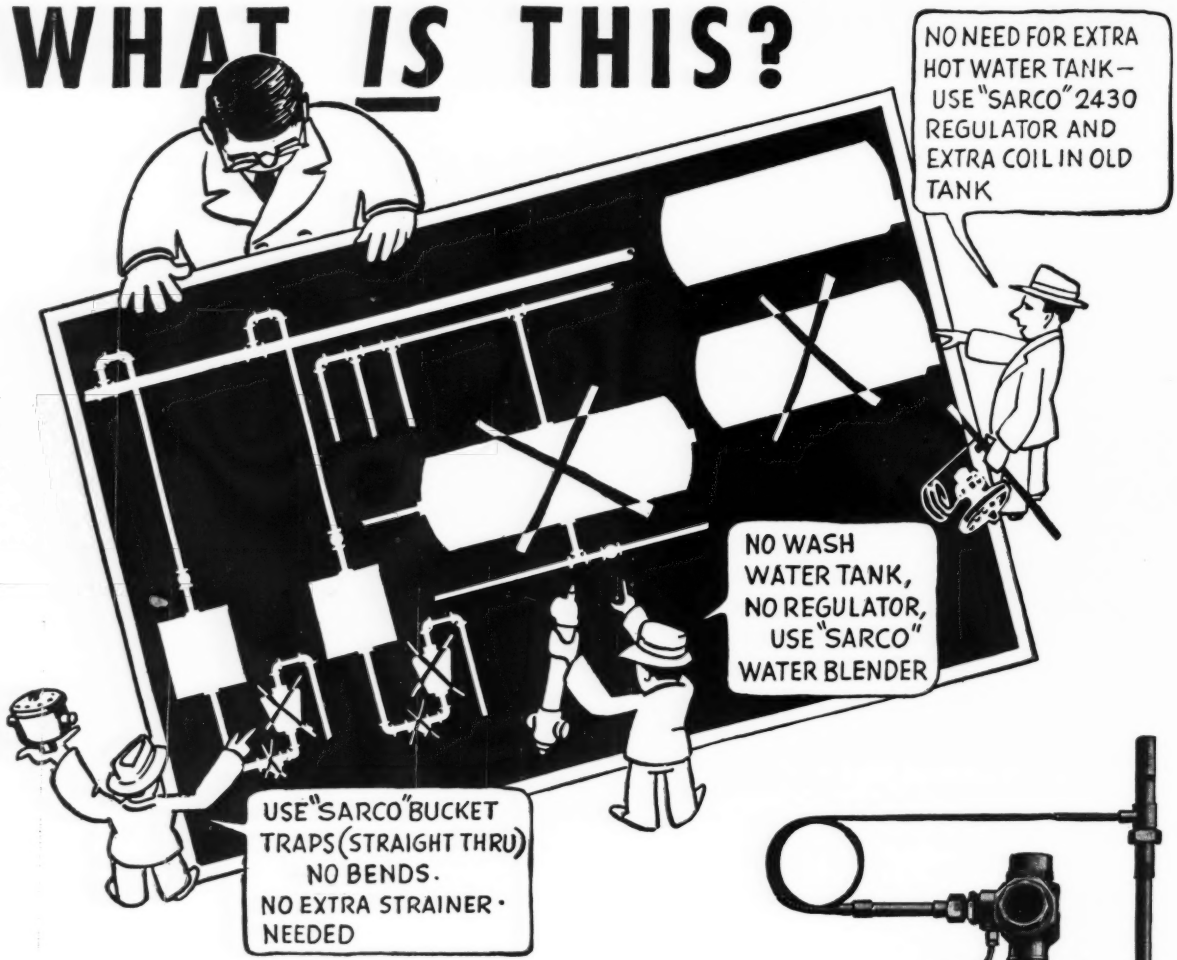
MODEL V MEETS ALL GOVERNMENT SPECIFICATIONS
Actually uses less critical materials than WPB Limitation Orders permit. Receptors are vibrated concrete, steam cured. Walls are of hard pressed fibre board. Finish inside and out, is two coats of high temperature baked enamel. Choice of white or gray.
★

operation in meeting the newly expanded opportunity in privately financed housing projects. Write now for detailed information about Weisway Model V and the profit opportunity which this cabinet shower affords.

HENRY WEIS MFG. CO., INC. (Est. 1876)
104 Oak St., Elkhart, Indiana

WEISWAY
Cabinet Showers

WHAT *IS* THIS?


NO NEED FOR EXTRA HOT WATER TANK— USE "SARCO" 2430 REGULATOR AND EXTRA COIL IN OLD TANK
NO WASH WATER TANK, NO REGULATOR, USE "SARCO" WATER BLENDER
USE "SARCO" BUCKET TRAPS (STRAIGHT THRU) NO BENDS. NO EXTRA STRAINER NEEDED

"We asked you to check our heating and hot water service plans, not *revamp* them. Now you suggest using less material obtainable in a shorter time and obviously requiring less time to install and less fuel and water. What IS this?"

Why, it's only the service anyone gets who uses the Sarco line of steam traps and temperature controls. Sorry but you were using a bucket trap that required a separate strainer—and a bend instead of a straight-through connection, and you overlooked the fact that Sarco temperature controls invariably reduce the number and size of tanks, pipes and other accessories all along the line. And the Sarco Blender cuts out another tank and control for your showers.

All over the country there are dealers, architects, engineers and contractors who know how to figure savings with Sarco. It's wise to save materials and fuel now—and low operating costs will surely be highly desirable when peace time operations resume.

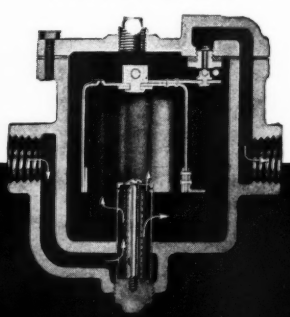
One letter will bring the man who knows how, to your door.

The new Sarco Hook Up Book with diagrams and calculation data is now available to any steam engineer.

2430 TEMPERATURE REGULATOR

WATER BLENDER

BUCKET STEAM TRAP



SARCO Saves Steam

SARCO COMPANY, INC., 475 FIFTH AVENUE, NEW YORK

SARCO CANADA, LTD., 85 Richmond Street, West, TORONTO, ONTARIO

Represented in Principal Cities

AA

FOR OUR ARMED FORCES

INDUSTRIAL AMERICA HAS PLEDGED

ALL-OUT AND EVER-INCREASING PRODUCTION

FOR OUR ARMED FORCES

—THAT THEY MAY QUICKEN THE DAY OF VICTORY

—THAT THEY MAY RETURN IN SAFETY

—AND THAT THE WORLD MAY BE ASSURED

OF A LASTING PEACE

BETHLEHEM STEEL

FRETZ-MOON

THE *Original* CONTINUOUS-WELD PIPE

Remember the name that marks the original continuous weld pipe

Fretz-Moon, years ago, pioneered the continuous weld process of pipe making. During the years to date, manufacturing refinements have given to this modern pipe 14 definite points of superiority.

While Fretz-Moon is doing its share to help win the war, supply house stocks are at low ebb, but the time will come when you can again obtain all the pipe you need for the many jobs that will need to be done at the end of hostilities. Until that time, accept any pipe you are offered, but always remember the name of the pipe that outmoded old manufacturing methods, the original continuous weld pipe, Fretz-Moon.

FRETZ-MOON TUBE COMPANY, INC., Butler, Pa.
Makers of black and galvanized steel pipe—in UNIFORM LENGTHS

WHEN YOU BUY PIPE REMEMBER THESE

14 Points

OF FRETZ-MOON SUPERIORITY

- Uniform in quality
- Uniform in size
- Uniform in wall thickness
- Uniform weld
- Uniformly soft and ductile
- Uniformly threaded
- Uniformly easy to cut
- Uniformly easy to thread
- Uniformly easy to bend and coil
- Uniformly easy to weld
- Uniformly easy to fit
- Uniformly clean and free from scale
- Uniformly galvanized with a smooth tight coating
- Uniform lengths

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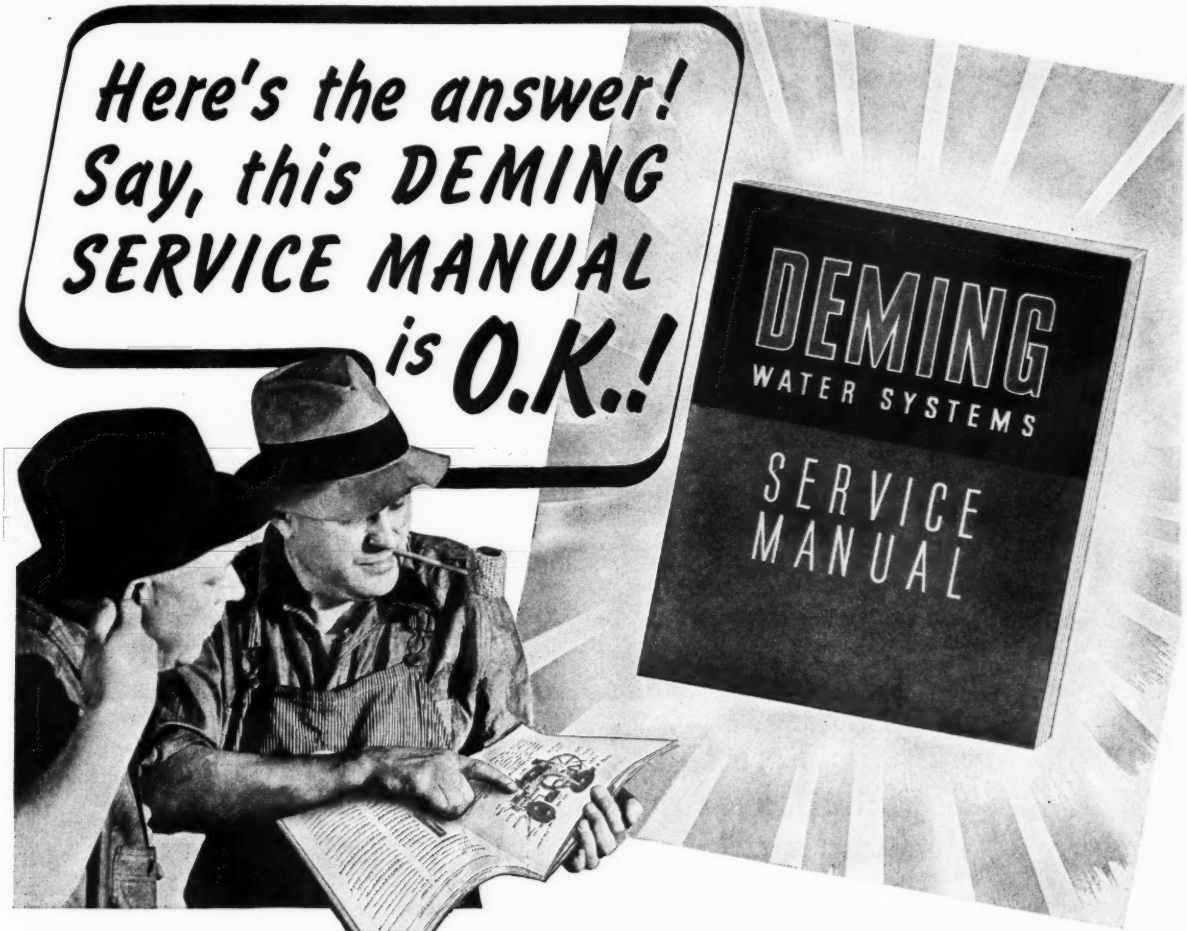
Made Also in Extra Long Lengths



Have YOU a copy at your fingertips?

Here, in this 68-page DEMING WATER SYSTEMS SERVICE MANUAL, you have the correct answers to hundreds of questions on WHAT to look for and HOW to service all types of Deming Shallow and Deep Well Water Systems.

Team-mate for this timely Service Manual is the 84-page Deming PARTS LIST NO. 42 which covers all parts and ceiling prices on each part.

The two books are the backbone of the DEMING PUMP PROTECTION PLAN, designed to help YOU meet wartime conditions in a PRACTICAL way! Any part or ALL of this plan is available for YOUR use *at no cost to you!* Write for complete details NOW!

THE DEMING COMPANY • SALEM, OHIO

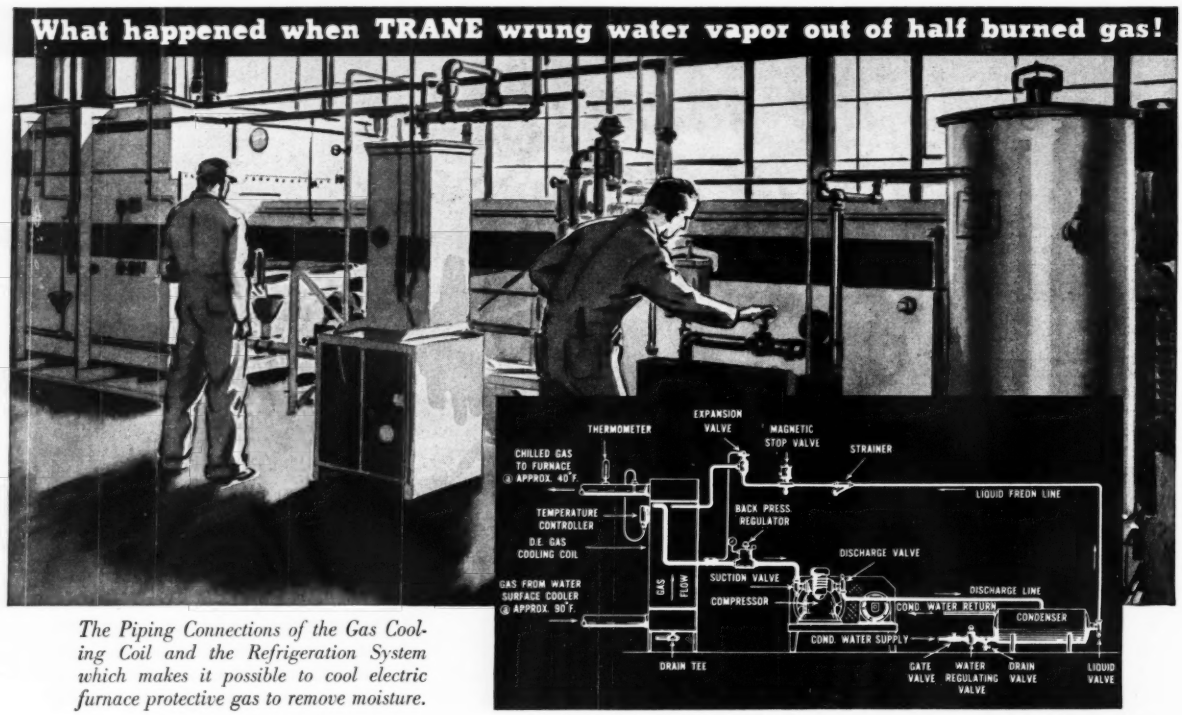
RUNNING WATER

DEMING

WATER SYSTEMS

★ BETTER SERVICE - LONGER LIFE ★

What happened when TRANE wrung water vapor out of half burned gas!



The Piping Connections of the Gas Cooling Coil and the Refrigeration System which makes it possible to cool electric furnace protective gas to remove moisture.

Protective atmosphere solves war production problem that saves precious metals and machine tools

THE ELECTRIC Furnace Company, Salem, Ohio, an important manufacturer of heat treating equipment, had to create a protective atmosphere in the sintering furnace it produced. In powdered metallurgy, the method that saves machine tools and materials in the manufacture of bushings and single articles for vital war industry, powdered metal is placed in the form desired, subjected to tremendous hydraulic pressure and then treated in the sintering furnace. The protective atmosphere was required to prevent oxidation and scaling created by the air in the furnace.

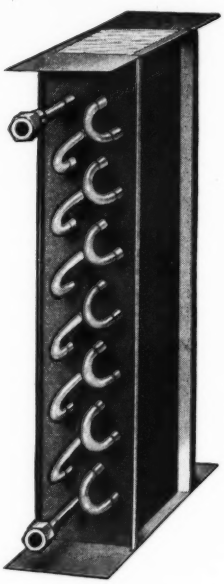
It has been found that this protective atmosphere can be produced most economically by partially burning commercial fuel gas. Unfortunately, however, this burning process produces water vapor which is also an oxidizing agent. Only a very low water vapor content is permissible for satisfactory results.

Condensation of the water vapor seemed to be the most effective way to do the job—especially since water at ordinary temperatures could be used to cool the gas. Tests, however, showed that the temperature of the gas could not be reduced sufficiently for the required degree of water vapor removal.

To solve the problem, Trane Air Engineers provided a special gas cooling coil. A direct expansion refrigerant was circulated through this coil. The temperature was reduced almost to freezing.

Thus Trane provided the means for a truly protective atmosphere completely free of all harmful oxidizing effects.

As in this and hundreds of other cases, the facilities of the Trane design engineering department are at the disposal of government and industry in the design of new and refined equipment to speed the war effort. Your nearby Trane Field Office will be glad to furnish details.



This Unit Cools Protective Atmosphere to Remove Dangerous Moisture

The Trane Gas Cooling Coil, utilizing a direct expansion refrigerant, cools partially combusted gas from 90° to 40°, thereby removing dangerous water vapor in a vital heat treatment process. This represents another of the many problems solved through the use of Trane Heat Transfer Equipment of both standard and special design.

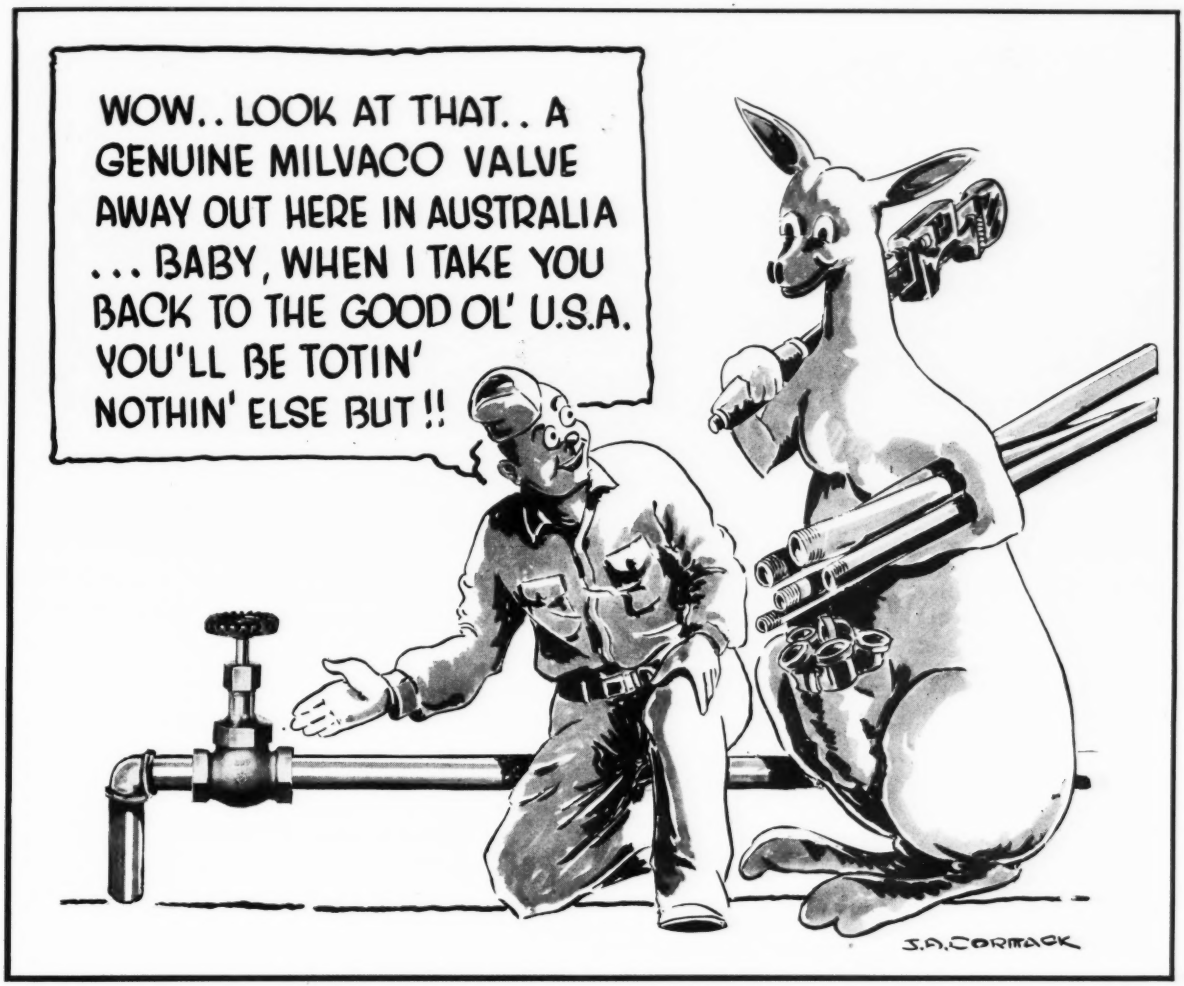
THE TRANE COMPANY

LA CROSSE, AIR WISCONSIN

Also TRANE COMPANY OF CANADA LTD., TORONTO, ONTARIO

HEATING • COOLING • AIR CONDITIONING EQUIPMENT FROM 85 OFFICES

MILVACO in the land of "down under"


WOW.. LOOK AT THAT.. A GENUINE MILVACO VALVE AWAY OUT HERE IN AUSTRALIA ... BABY, WHEN I TAKE YOU BACK TO THE GOOD OL' U.S.A. YOU'LL BE TOTIN' NOTHIN' ELSE BUT !!
J.A. CORMACK

"Was I surprised . . . two days after we arrived here me an' my helper went out on a job and . . . what do you think . . . we ran right smack into a No. 575 MILVACO Globe Valve. Then I started to look around and, believe me, I found plenty more just like it. Kinda made me feel I wasn't so far away from home after all."

Wherever America's Fighting Forces are in action...in every quarter of the globe...wherever valves are needed to facilitate the handling of vital liquids or help provide for the comfort and convenience of the men in the services...there's every liklihood you'll find a representative number of MILVACO Valves on the job... DEPENDABLE AS ALWAYS.

MILWAUKEE VALVE COMPANY

MILWAUKEE WISCONSIN

Crane designers are planning the bathroom and kitchen of *tomorrow*

WHAT will the bathroom and kitchen of tomorrow be like? Already on the drawing boards of Crane designers are new ideas—startlingly different ideas that promise new beauty—new comfort and new economy for tomorrow's homes.

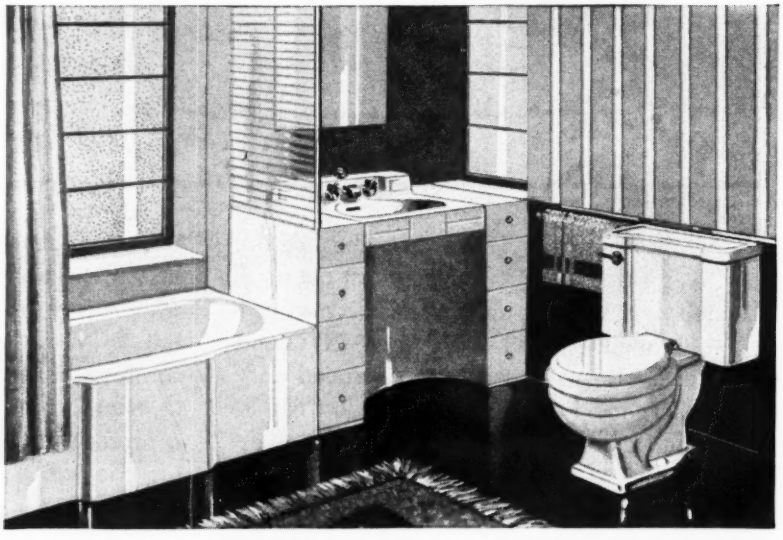
Even now plans are being made to submit these ideas to home owners. The Crane line of the future will be designed to reflect the wishes of those who are planning homes and those who will own the new homes of postwar America.

And when V-Day comes and prospective home owners say "Go Ahead," the Crane line promises a new conception of beauty and efficiency in the bathroom and kitchen.

The Drexel bathroom group shown at right may contain the fixtures many of tomorrow's home owners prefer, and, if it does, it will be included in the Crane line.

But the introduction of new materials—the development of the new ideas on which Crane designers are now at work—may mean a bathroom and kitchen of the future radically different from the bathroom and kitchen of the past.

Whatever fixtures are included in Crane's postwar line, they will embody the years of experience—the technical skill of Crane designers and engineers—the same regard for beauty and style, as well as sanitation, that have always characterized Crane quality equipment.



CRANE

CRANE CO., GENERAL OFFICES:
836 S. MICHIGAN AVENUE, CHICAGO

PLUMBING • HEATING • PUMPS
VALVES • FITTINGS • PIPE

NATION-WIDE SERVICE THROUGH BRANCHES, WHOLESALERS, PLUMBING AND HEATING CONTRACTORS

-for the Duration

THE "V" MODEL Watrous FLUSH VALVE

Conserves critical war materials . . .
Meets War Department Spec. PE-623
Built to give lasting, reliable service

• • • —

WAR projects must have flush valves that are highly dependable . . . long-lived . . . water-saving. Yet the critical materials used in the manufacture of such valves must be held to the minimum.

To meet this need, Imperial developed and is concentrating its production for the duration on Watrous "V" Flush Valves. These valves save brass, bronze and other extremely critical metals required for the war. They conform to War Department Specification PE-623 and are approved for use on government projects.

These "V" model valves retain, however, Watrous proved design and excellence of workmanship, and they will give lasting, economical service.

As will be noted from the illustration at right, Watrous "V" Flush Valves are similar in general appearance and features to the well known Watrous "Jewel" Flush Valve. The alternate materials used in place of brass and bronze in these valves have been selected with extreme care to the end that efficiency and dependability will be retained.

It is important to note that all vital working parts of the valve remain brass, a vital point in assuring long, trouble-free service.

For detailed information on Watrous "V" Flush Valves and the combinations to use to comply with War Department Specifications, write for Bulletin 858-W, or see the 1943 Sweet's Catalog File, Section 27, Catalog No. 39.

THE IMPERIAL BRASS MFG. CO.
1231 West Harrison Street, Chicago, Illinois
Distributed through wholesalers of plumbing materials

"V" Model retains Watrous proved design and excellence of workmanship

Like all Watrous Flush Valves, the "V" model offers a water-saver adjustment. This enables valve to be regulated to MINIMUM water requirements of fixture by a slight turn of the adjusting screw.

• • • —

Advantages of Watrous system of "Single-Step-Servicing" are fully embodied in this valve. Under this system complete operating unit may readily be lifted out. This makes possible quick, convenient replacement of worn washers, etc., if ever necessary.

• • • —

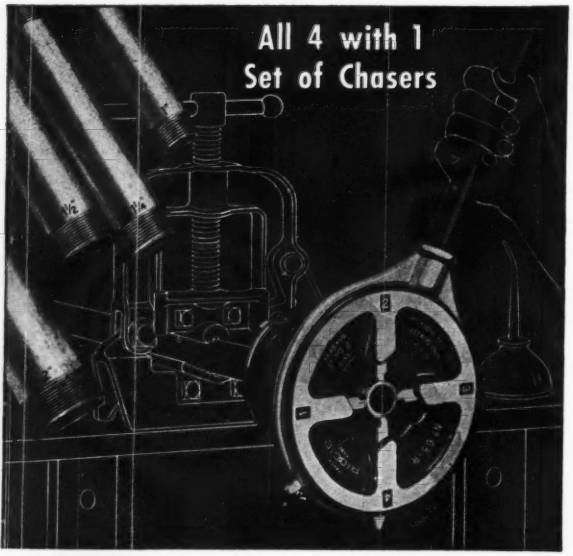
Valve is shown complete with vacuum breaker which provides positive protection against back-siphonage.

QUICK REFERENCE CHART

Showing Watrous 'V' Flush Valve combinations which correspond to various Item Nos. in War Dept. Spec. PE-623

War Dept. Spec. No.	Watrous Combination to Use	War Dept. Spec. No.	Watrous Combination to Use
Item P-1	WD-933-WVB	Item P-6A	WD-932-VB
Item P-2	WD-949	Item P-30	WD-939-VB
Item P-3	WD-949	Item P-31	WD-939-VB
Item P-4	WD-949-VBF	Item P-32	WD-941
Item P-6	WD-932-VB		

Watrous Flush Valves

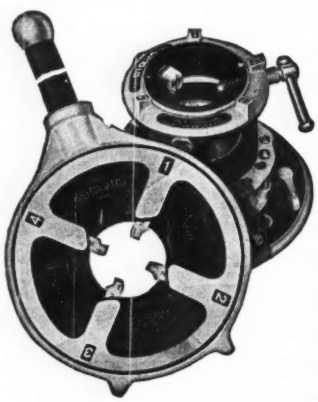


Perfect THREADS

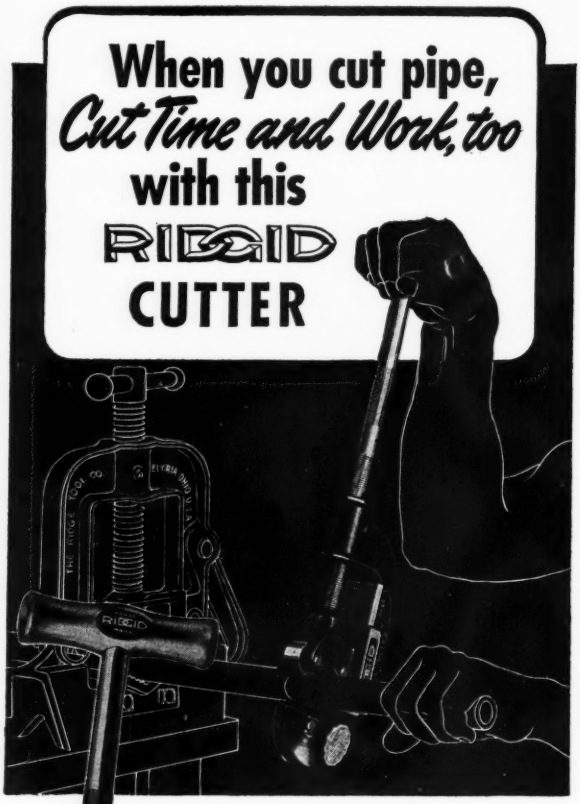
Faster and Easier with this self-contained

RIDGID No. 65R

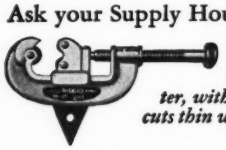
THREADS you cut with this remarkable No. 65R are clean, sharp and of micrometer accuracy — *in all 4 sizes,* 1" to 2" — a new quality in a self-contained die stock. But you'll like also the easy floating cutting action, the 10-second change to pipe size, the instant mistake-proof work-holder without bothersome bushings. It's a rugged steel and malleable tool with high-speed steel and chaser dies, assuring you long trouble-free service. It pays you to ask your Supply House for the RIDGID 65R.



No. 65-R, ratchet and plain, one and two handle, cam or plate type workholders.



REASONS why RIDGID Cutters roll more quickly and easily through all kinds of pipe are in the design of the tools. The thin-blade wheel, for instance, coined from tool steel and assembled in steel-bushed hub, makes an unusually speedy clean cut. Heavy-duty cutter frames are warp-proof, always cut true, are nicely balanced for easy work. 6 sizes for pipe from ⅛" to 6". Also No. 42, 4-wheel short handle for cutting in close quarters. Ask your Supply House.



RIDGID *Tubing Cutter, with rolls — also cuts thin wall conduit.*

All RIDGID Pipe Tools are sold through Supply Houses

RIDGID

★ PIPE TOOLS ★

THE RIDGE TOOL COMPANY
ELYRIA • OHIO • U.S.A.

Fast-Working Tools for War . . . and the Busy Peace that's Coming

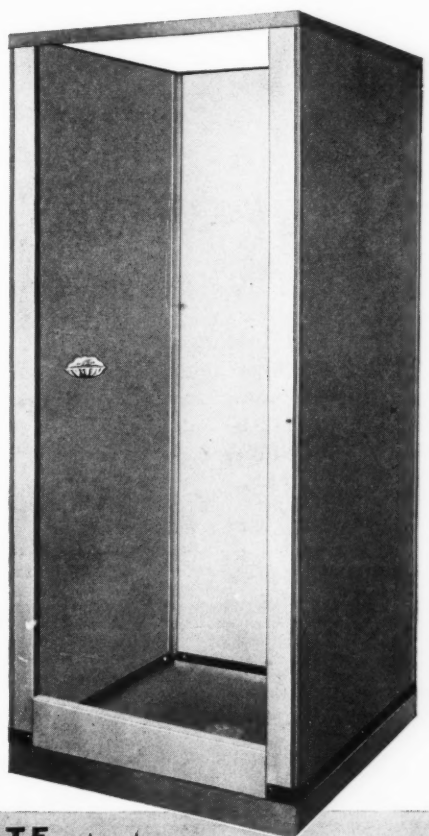
Bathe-Rite SHOWER CABINETS

Offer you QUICK-ASSEMBLY *Features that cut Labor-Time by* ONE QUARTER!

Even MINUTES count, when Plumbers and Contractors are hurrying to get Wartime building projects finished on time. That's one reason why MORE Bathe-Rite Shower Cabinets are being installed—because 25% is a substantial, and profitable, labor-saving!

Look at it this way . . . If Bathe-Rite Quick-Assembly features save 25% and more in man-hours on each cabinet, you can install FOUR Bathe-Rite Shower Cabinets in the SAME TIME ordinarily required for THREE. Think what that means in multiple Shower installations! And it's possible even with unskilled help—a fact that helps materially to solve your labor shortage problems.

BATHE-RITE Shower Cabinets are attractively designed, modern to the last detail, sturdy and strong. They easily meet the highest wartime standards for convenient, healthful bathing facilities in Housing, Factories, Barracks, Hospitals, Schools . . . The result of BATHE-RITE'S long experience, and wide knowledge of prefabricated shower needs.



WRITE OR WIRE FOR PRICES AND DETAILS!

Give name of project and quantity required. Delivery assured on any quantity, when and where needed.

BATHE-RITE SHOWER CABINETS

Two Standard Models meet every Wartime need. Built of NON-CRITICAL materials to easily comply with U. S. War Department, and Federal Public Housing Authority specifications. Packed for easy handling.

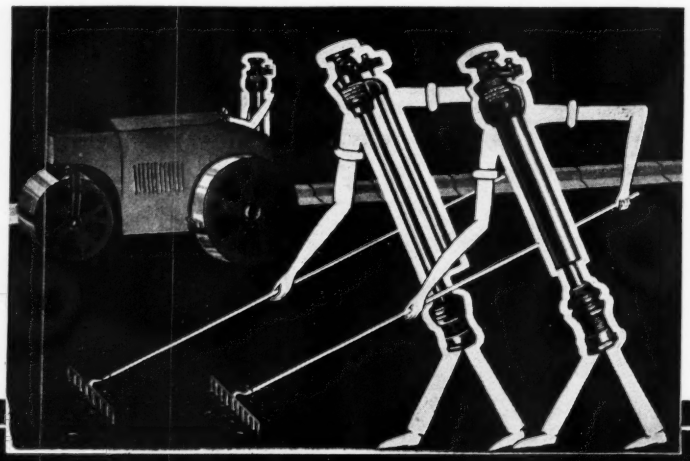
Bathe-Rite division
MILWAUKEE STAMPING COMPANY
804S South 72nd Street, Milwaukee, Wisconsin

★ ★ QUALITY-BUILT by BATHE-RITE ★ ★

SHERWOOD BALL COCKS
Serve and Save!

Urgent War-Time Needs Supersede Civilian Demands. Sherwood Ball Cocks will be back on the line as soon as critical materials are available or suitable substitutes.

☆ ☆ ☆ ☆ ☆



SHERWOODS *Pave the Way!*

. . . TO POST-WAR BUSINESS

The No. 86 is quiet . . . fills the tank quickly. Standard height 13½". Other heights furnished on request. All threads are ¼" I.P.S. Boxed with 8" refill and 9" rod.

While you are busy on "essential" jobs your civilian customers are depending upon the products you installed to carry them through for the Duration. Now is the time the continued quiet dependable performance and water-saving feature of the SHERWOOD Ball Cock you recommended is building customer good will for you. That's why these same customers will look to you for further maintenance and remodeling jobs when this war is over. Wherever installed, SHERWOOD Ball Cocks are paving the way to volume post-war business for the plumbers who sold them.

SHERWOOD BRASS WORKS
6331 East Jefferson Ave. Detroit

SHERWOOD Ball Cocks

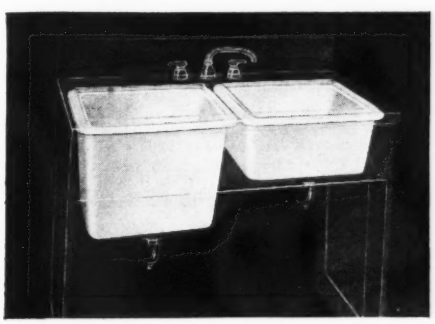
This illustration shows the spraying operation which gives Perma-Gloss sanitary ware its acid proof high lustrous surface.

General Ceramics Perma-Gloss sanitary ware complies 100% with Government restrictions on iron and steel—and today we are producing at peak capacity to meet the greatly increased demand.

Perma-Gloss sanitary ware consists of carefully selected clays molded, sprayed with a layer of vitreous china glaze, and fired at a high temperature. The result is a durable, uniform body that will withstand thermal shock and will not dunt. It is acid proof through and through — not merely acid resistant. In addition, Perma-Gloss sanitary ware has a high lustrous, non-crazing surface that is easy to keep clean—no paint or glaze to peel or chip—no iron to rust.

Write for further detailed information about the many different Perma-Gloss models, all of which meet Federal specifications.

(Perma-Gloss sinks and trays meet Federal specifications E-W WP-5419 — sink XG-20; Tray XT-20. Also specifications for F.P.H.A. and other war housing and dormitories.)



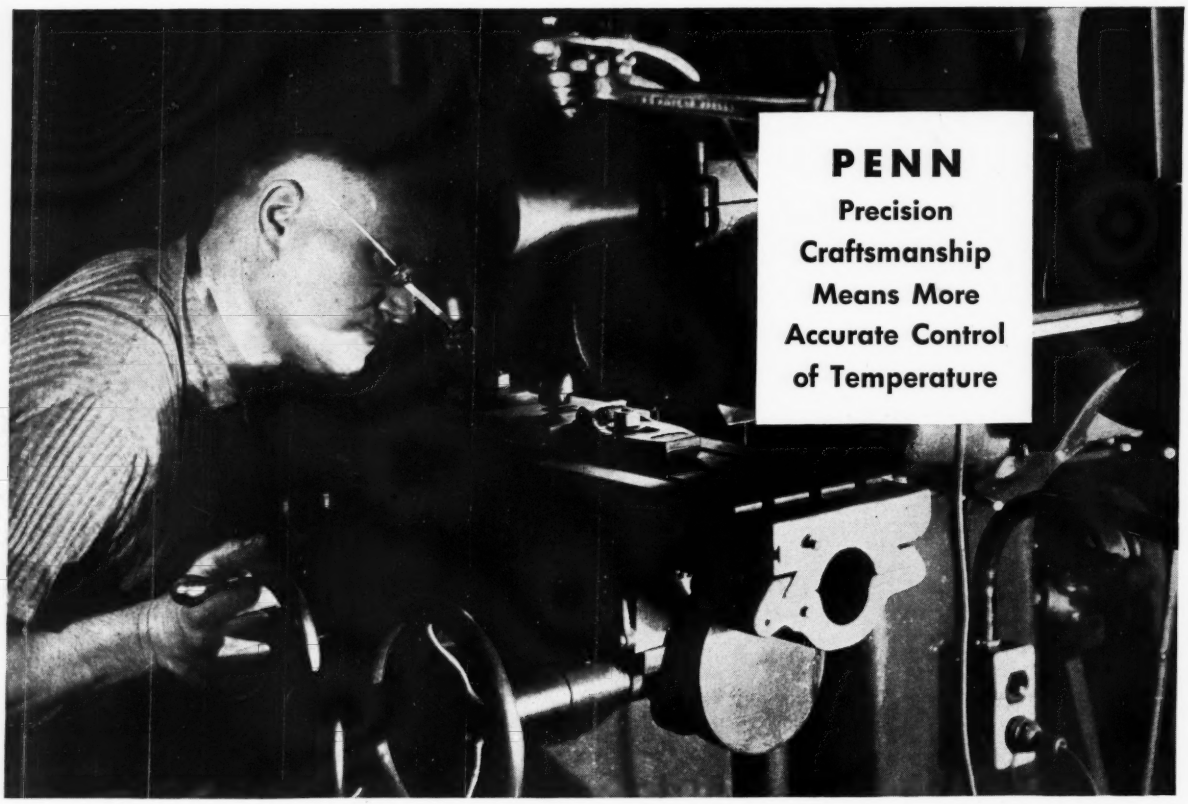
B574 Flat Rim Sink and Flat Rim Tray in combination, consisting of a 20 x 18 sink and 20 x 18 tray. These two items can be set in an under-sink cabinet as a unit.

General Ceramics Co.

GENERAL CERAMICS COMPANY • SANITARY WARE •

SANITARY WARE DIVISION
METUCHEN, NEW JERSEY

3451



NOW...MORE VALUABLE THAN EVER

PENN HEAT ANTICIPATING CONTROL

With the present urgent necessity for fuel conservation, owners of heating plants controlled by Penn Temtrol—the famous heat anticipating thermostat—are especially fortunate.

Fuel-saving is one of two outstanding features of the Penn thermostat—the other is the healthful comfort of uniform temperature, with no wide swings or over-runs. This is especially important now that your customers are operating their heating systems on a lower temperature level that usual.

Naturally Penn controls are available now only under the established priority rules. Our engineering skill and production facilities are being devoted without stint to the making of precision instruments of vital importance to our fighting forces—on land, at sea and in the air.

When the war is won you can look to Penn with confidence for the automatic controls which will carry our American standard of living to new heights of comfort, convenience, economy and efficiency.

The advanced engineering which perfected the heat anticipation principle, the precision manufacture which embodied this principle in Temtrol, will be pioneering new achievements in control for the heating systems of the future.
Penn Electric Switch Co., Goshen, Indiana.

PENN

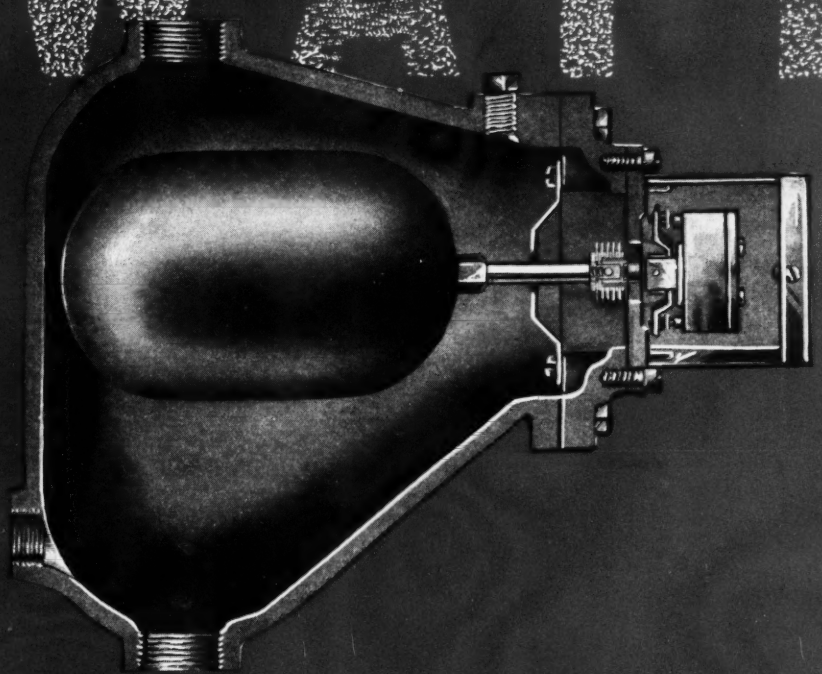
AUTOMATIC CONTROLS

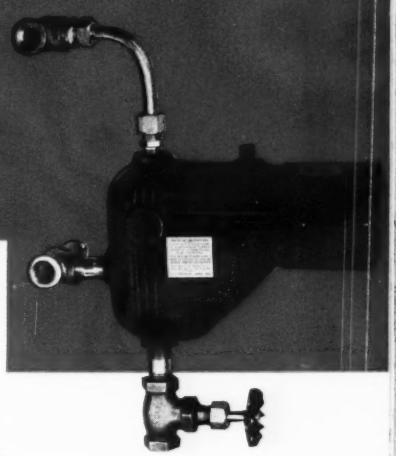
FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

To guard life and property...to conserve materials and waste...is our duty

ELIEF VALVES • REDUCING VALVES • WATER TEMPERATURE CONTROLLE

WATTS





WATTS SERIES 85—PUMP STARTERS AND LOW WATER CUT-OFFS

For High Pressure Boilers up to 150 lbs. Maximum Steam Pressure

Heavily constructed float operated control devices for use on high pressure service installations with 1" equalizing pipes. They feature wide versatility of switch mechanism and operational interchangeability due to two R. F. Unit, single pole, single throw switches, separately mounted in the switch box. Depending on number and use of these switches the following services are available: No. 85 — single switch — low water cut-off only. No. 85F — single switch in inverted position — pump starter only, or as contact for solenoid feed valve or alarm bell. No. 85D — two switches — pump starting and low water cut-off services. No. 85DTRF — two switches wired to give special TRIPLE SERVICE as follows: **1** . . On drop of boiler water level, below predetermined point, float mechanism starts pump or other solenoid feed valve. **2** . . With normal restoration of water level switch operation is reversed and pump is shut off. **3** . . If the emergency condition exists whereby water is NOT fed in sufficient volume to reach the pre-determined boiler water level where the mechanism should start the pump, THEN with a slightly lower drop in water level the mechanism will cut off the stoker, oil burner, or other firing means and AT THE SAME TIME ring an alarm bell — if wired to make use of the THREE SERVICES. Accessibility of the RF Unit switch mechanism is stressed and at little or no cost a Watts Control may be changed, right on the job, from a single operation to a multiple operation service unit. This 85 SERIES — Nos. 85, 85F, 85D, 85DTRF — perform their services accurately and dependably.

SERIES 89

Low Water Cut-Offs For Gauge Glass Installation

Furnished complete with improved connectors and all fittings necessary to attach to boiler. No threading necessary. Provided with ¼" tapping for pressure switch. Maximum steam pressure 25 lbs.

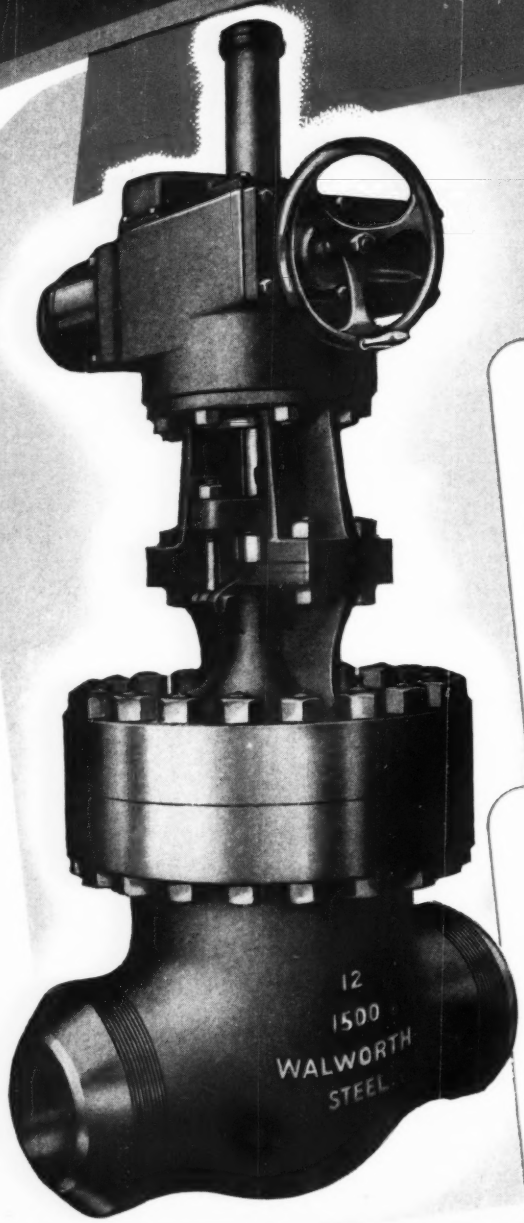
For complete information see NEW condensed catalog and price sheet No. 43A

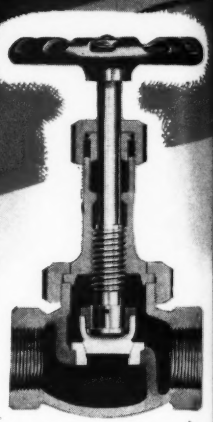
• A SIGN OF QUALITY • A SIGN OF THE TIMES •

WATTS REGULATOR CO.

WALWORTH

VALVES
FITTINGS
TOOLS





BRONZE VALVES

Gate, Globe, Angle and Check—These Walworth types are made for all pressures, temperatures, and services for which bronze valves are suitable. Walworth No. 225P Globe Valve, illustrated, has a stainless steel, plug type, seat and disc, heat treated to a minimum of 500 Brinell hardness. Boiler scale, sand, grit, and other foreign particles cannot mar the surface of either the seat or disc. Wire-drawing is practically eliminated. Extra large stems and long stem threads have been provided to decrease thread wear and increase valve life. Every part has been designed to assure maximum protection against wear and leakage. For complete information regarding Bronze Valves refer to Walworth Catalog 42, Sections 2-6.

CAST STEEL VALVES

Illustrated at the left is a 12", 1500 lb. Walworth Steel Valve with welding ends. Walworth Steel Valves in all series can be furnished with welding ends, screwed ends, or flanged ends within the limits of war production. The complete line of Cast Steel Valves, in Gate and Globe types, have extra strength and protection due to heavy walls. Deep stuffing boxes eliminate costly leaks. Flow loss at high velocity is decreased by streamlined ports. Every detail of design, metallurgy, and construction helps to assure better and longer service. See Sections 16-17 of Walworth Catalog 42 for complete data on Cast Steel Valves.

WALWORTH

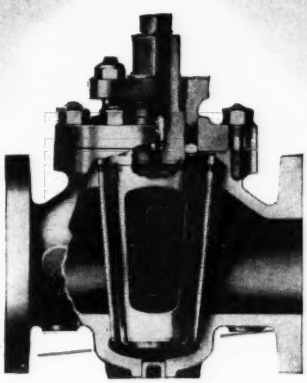
WALWORTH COMPANY
60 EAST 42nd STREET, NEW YORK

VALVES
FITTINGS
and TOOLS
Backed by 100
Years' Service

DISTRIBUTORS IN PRINCIPAL
CENTERS THROUGHOUT THE WORLD

STEAM · OIL · WATER · GAS · AIR

and other liquids and gases



LUBRICATED PLUG VALVES

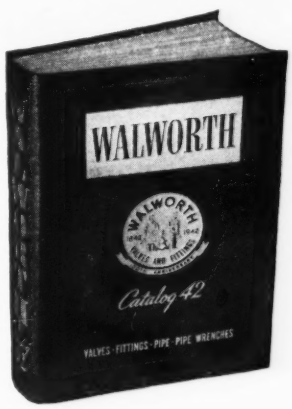
Some fluids are difficult to control with conventional types of valves — but Walworth Lubricated Plug Valves do the job safely and easily. They may be opened or closed with but a quarter turn of the handle, and have proved their ability to give a dead-tight shut-off. Operation is sure and smooth. All these qualities plus greater protection against corrosion and erosion make Walworth Lubricated Plug Valves ideal for "difficult" jobs. They are made in sizes from ½ to 24-inches and for pressures from 125 to 5000 lbs. Complete information on Lubricated Plug Valves will be found in Section 15 of the new Walworth Catalog.

WALSEAL FITTINGS

For Leakproof "One-piece" Copper or Brass Pipe Lines — Walseal Fittings are threadless bronze fittings into the ports of which the exact amount of silver brazing alloy has been inserted by Walworth at the time of manufacture. Joints are made by inserting the pipe end into the fitting port, then heating both pipe and fittings with an oxyacetylene flame. The result is a *Silbraz Joint* which saves time and effort, and which is silver-brazed — not soft soldered. A brass or copper line made up with Walseal Valves and Fittings is actually a "one-piece" line, leakproof, vibration-proof, shock-proof, and corrosion-resistant. Refer to Section 20 of Walworth Catalog 42 for complete information on Walseal Fittings.

One hundred years ago Walworth first manufactured valves and fittings. Walworth has been manufacturing these products continuously ever since.

WALWORTH 1842 1942 VALVES AND FITTINGS 100TH ANNIVERSARY



SPECIFY FROM THE NEW WALWORTH CATALOG 42

The new Walworth Catalog 42 is just off the press. It gives the latest information on any question concerning Walworth products. It is clearly indexed and contains complete up-to-date data on valves, fittings, and pipe, including working and test pressures, plus service recommendations. Conformity of metals to A.S.T.M., Marine, and U. S. Navy specifications is given in detail. Dimensions for layout and operation, as well as engineering data, make valve and pipe installations easier and add to the usefulness of this new Walworth Catalog 42. Be sure to get a copy. Fill out and attach the handy coupon to your letterhead.

Address your inquiry to Dept. **DE,**
Walworth Co., 60 East 42nd St., N. Y. C.

Please send a copy of the new Walworth Catalog 42 to:

Name _____

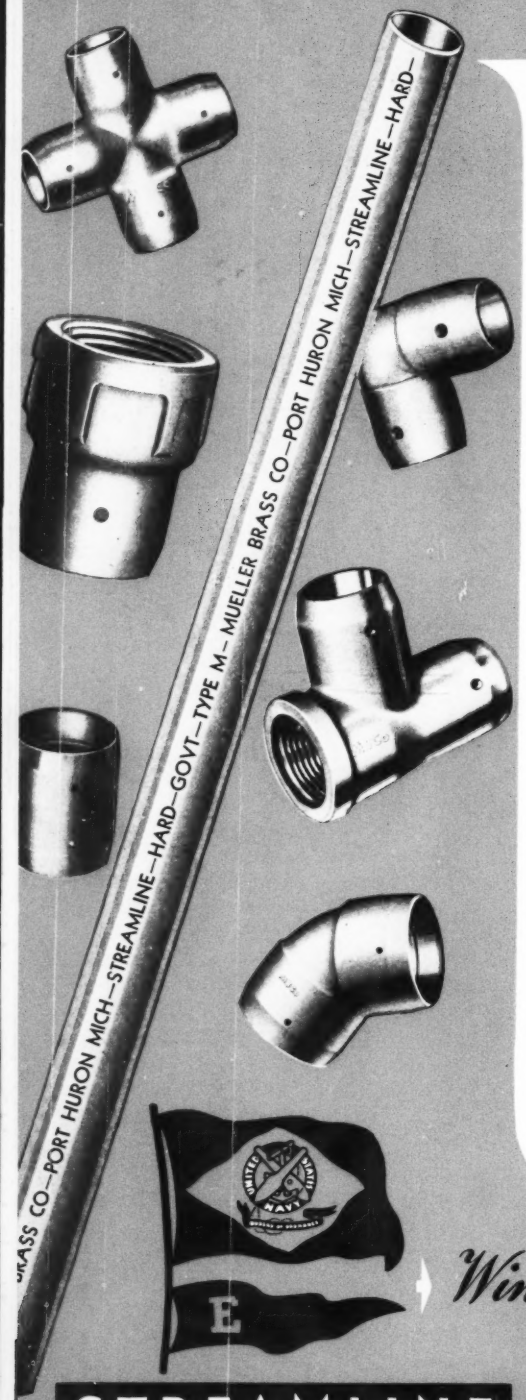
Title _____

Company _____

Address _____

City _____ *State* _____

Working on Uncle Sam's Business.. *till the hour of Victory*



TWENTY-FIVE YEARS AGO THIS FACTORY WAS WORKING ENTIRELY FOR UNCLE SAM—in fact, our country's needs in the first World War was the very reason for our birth and existence. TODAY WE ARE AGAIN WORKING 100% TO SUPPLY WAR MATERIALS FOR OUR ARMED FORCES—AND DURING ALL THE YEARS BETWEEN THE FIRST AND SECOND WORLD WAR IN WHICH WE WERE BUILDING A LARGE DOMESTIC BUSINESS, WE ALSO CONTINUED TO SUPPLY ORDNANCE MATERIAL FOR UNCLE SAM'S NAVY.

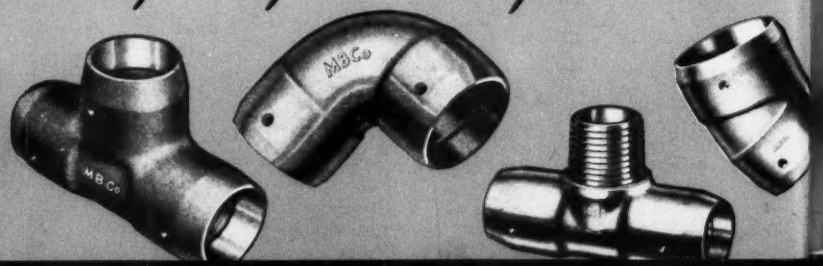
Here, indeed, was gained a wealth of accumulated experience which we were able and happy to put at the disposal of our Government. No valuable time was lost in coaching or in experimental orders. We went right to work and we're determined to stay at it until our share is completed and the war is won.

During the execution of these orders, new principles are continually learned—new methods absorbed; new materials developed and means of saving valuable metals devised. Not only will this help our war effort now, but it will be reflected after the war in better products and better service to our customers.

So, after this war is over we shall manufacture better brass forgings and screw machine parts, better brass rod and refrigeration valves and fittings, and last but not least, better STREAMLINE Copper Pipe and STREAMLINE Solder Type Fittings.

STREAMLINE Copper Pipe and Fittings are now in the service of our country for many purposes. They are installed in naval vessels of practically all types including victory ships, sub chasers, submarines, mine sweepers, etc. They are used for plumbing, heating, refrigeration, air conditioning, oil lines and a multitude of other services. When peace returns to the world the plumbers and steamfitters of America will again install them to protect the health of the nation as they are now protecting the health of our men in the armed forces.

Winners of Navy "E" Award for Excellence



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PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

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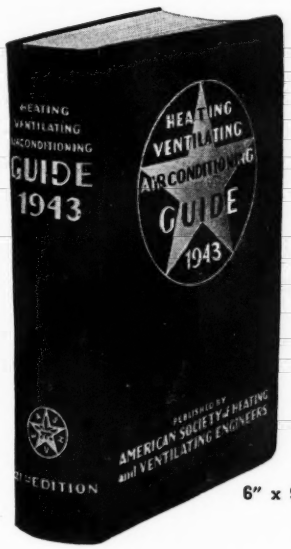
More complete and useful than ever before

Data essential for men in Heating, Ventilating and Air Conditioning

Engineers, Contractors, Architects—men in government service, industry, research; men in residential, institutional or commercial fields — all will find indispensable data that will save time, promote accuracy and efficiency.



6" x 9"

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For men interested in Steam and Hot Water Heating:

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In addition — 23 chapters covering, Electric Heating, Industrial Air Conditioning, and other phases of heating, ventilating, air conditioning, and related phases of refrigeration.

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Enclosed is { $5.00 for standard edition / $5.50 for thumb-index issue } of Heating, Ventilating, Air Conditioning Guide 1943; please send me a copy. It is understood that I may return it within 10 days, if it is not satisfactory, and you will refund my money.

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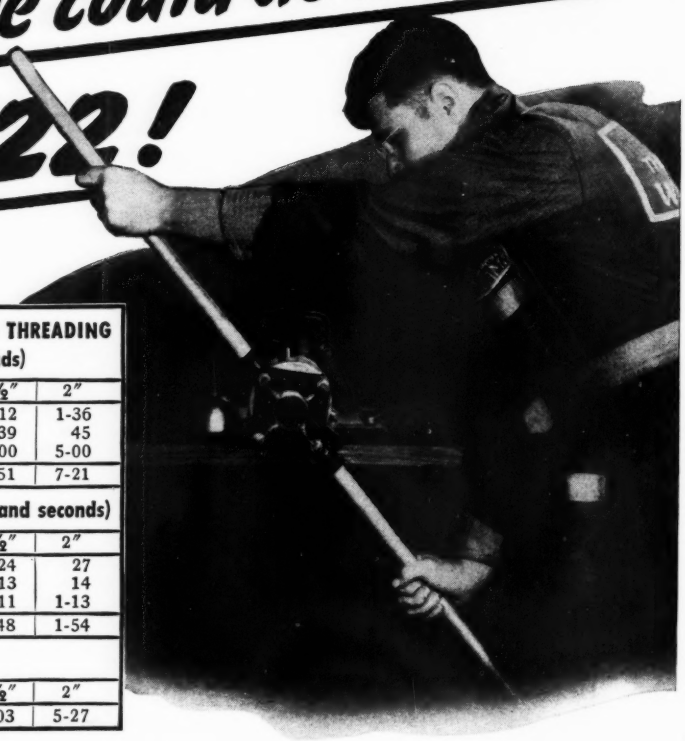
Think what he could do with an OSTER 422!



OSTER No. 422 POWER VISE STAND versus HAND THREADING HAND METHOD (Time in minutes and seconds)						
PIPE SIZE	½"	¾"	1"	1¼"	1½"	2"
Cutting-off time .	33	39	1-00	1-06	1-12	1-36
Reaming time . .	12	24	27	30	39	45
Threading time .	1-30	1-48	3-00	3-39	4-00	5-00
TOTAL TIME	2-15	2-51	4-27	5-15	5-51	7-21
OSTER No. 422 POWER VISE STAND (Time in minutes and seconds)						
PIPE SIZE	½"	¾"	1"	1¼"	1½"	2"
Cutting-off time .	12	15	18	21	24	27
Reaming time . .	7	10	11	12	13	14
Threading time .	55	1-00	1-07	1-09	1-11	1-13
TOTAL TIME	1-14	1-25	1-36	1-42	1-48	1-54
TIME SAVED WITH OSTER No. 422						
PIPE SIZE	½"	¾"	1"	1¼"	1½"	2"
TIME SAVED	1-01	1-26	2-51	3-30	4-03	5-27

The difference between hand threading and power threading is often the difference between profit and loss on a job. Hand tools are essential for many requirements. But hand *use* of hand tools is non-essential and wasteful on most jobs.

With the Oster No. 422 Power Vise Stand, a mechanic can use his own die-stocks, cutters, and reamers and mount his own vise. He can make legs for the stand from standard 1" pipe. All other equipment is included with the Oster No. 422: (Universal, reversible, variable speed motor; Universal, gripping chuck on front of spindle; universal, centering chuck at rear; two carrying arms; feet for front legs; and universal vise mount plate.)

Low cost of the Oster No. 422 is soon wiped out by actual time savings. Ask your Oster distributor for complete details, or write to us.

THE OSTER MANUFACTURING CO.
2045 E. 61st St. • Cleveland, Ohio, U. S. A.

No Time Out to Celebrate Our 50th ANNIVERSARY 1893-1943

OSTER

Sloan Ads are YOUR Ads

CALENDAR
65-171
● The mere thought of being *without* telephones today should bring us sharply to the realization that we must handle our phones carefully. Avoid dropping the receiver or slamming it into its cradle—and do not allow receiver cord to get twisted. Yes—with normal care our telephones *will* last for the duration.
They rarely need attention BUT... they deserve it now
● The same applies to your Sloan Flush Valves. Just because they have served you so well through the years, don't take them for granted. Call in a master plumber today and have him check every one of your Sloan Flush Valves. Probably many of them will need no attention whatever. Probably only a few repairs will be required. But remember, a single part for replacement is a lot easier to get than an entire new Flush Valve. You need to have the assurance that your every Sloan Flush Valve is working perfectly, still as good as new and ready for many more years of trouble-free service.
All the material used in the manufacture of your Sloan Flush Valves is on the critical list. Conserve vital metals by proper maintenance.
SLOAN Flush VALVES
SLOAN VALVE COMPANY... 4300 WEST LAKE STREET • CHICAGO

THIS NATION-WIDE CAMPAIGN FOR CONSERVATION BUILDS YOUR REPAIR AND MAINTENANCE BUSINESS

LOOK FOR BUSINESS FROM HOTELS, HOSPITALS, APARTMENTS, OFFICE BUILDINGS, SCHOOLS, CLUBS, ETC

Every month Sloan Valve Company is helping build your repair and maintenance business—the long profit side of your ledger. . . . When you get a call, here are just a few suggestions: When opening a Sloan Valve use a flat wrench. Exercise care when removing the rubber diaphragm or molded cups, for with careful handling these can be re-used in most cases. Tighten the handle packing nut. Wipe plated Valves with damp cloth to restore lustre. . . . And remember: Sloan Flush Valves (the world's premier) are still available for all projects having the proper priority rating. SLOAN VALVE COMPANY, 4300 W. Lake St., Chicago.

SLOAN FLUSH VALVES

Illustration shows magnified cut-away section of No. 50 Vacuum Breaker installed in DELANY FLUSH VALVE. Note how the flush tube is AIR-VENTED. Flexible rubber check valve with lips at base is contracted by vacuum. When valve is flushed, the check valve expands tight against the tube closing the air-vents — water passes thru the expanded lips.

The first line of defense is maintenance of health. To this end, the United States Government, Bureau of Standards, requires installation of an approved Backflow Preventer on every toilet fixture that has a jet, to protect the men in our armed forces. The Delany #50 Vacuum Breaker under all existing test requirements known to plumbing industry successfully meets them all. If any device is not capable of performing this function (protection under any and all conditions) it is most certainly inadequate. If a unit's efficiency can be sabotaged through its own weakness (mechanical breakdown or failure), it should be condemned of itself. We have reports of every irrefutable test that the Delany Vacuum Breaker can deliver all around protection day in and day out. It is 20 years ahead of any vacuum breaker on the market.

SINCE 1879

Coyne & Delany Co.

BROOKLYN N.Y.

Victory Begins with Bonds—KEEP BUYING!

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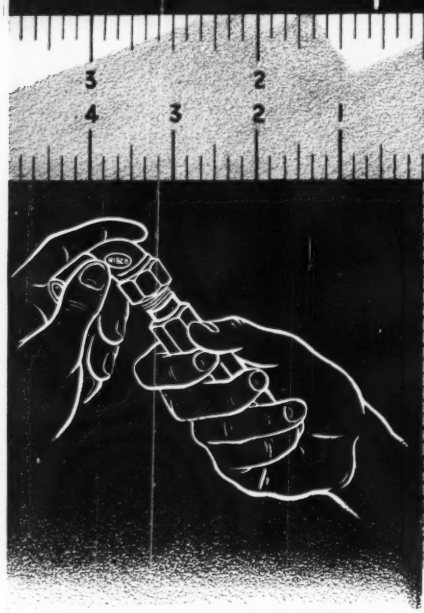
ACCURACY!

EVERY *Nibco* FITTING IS SQUARE



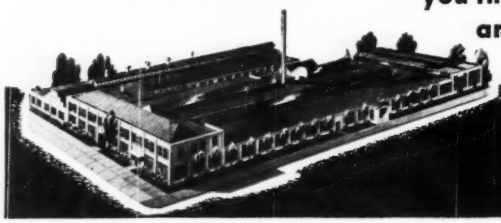
NIBCO

Means Quality!

EVERY THREAD TESTED FOR SIZE AND PITCH!

NIBCO fittings are perfect because ONLY PERFECT FITTINGS PASS NIBCO TESTS! Every threaded NIBCO fitting is checked with a thread gauge that is frequently corrected for wear. That's another reason you can always depend on any product that bears the NIBCO trademark.

YEARS of research, specially designed equipment and an exclusive patented process are responsible for the quality and positive precision in the forming of NIBCO Wrot Fittings. They are always uniform—EVERY fitting is "round and square," making correct alignment easy. True roundness and accurately maintained tolerances save installation time and assure perfect solder joints. When you think of copper plumbing think of NIBCO Valves and Fittings . . . the finest that can be made.



NORTHERN INDIANA BRASS COMPANY
ELKHART, INDIANA
Valves and Fittings Since 1904

Safeguards

THE NATION'S HOME *Fighting* FRONT

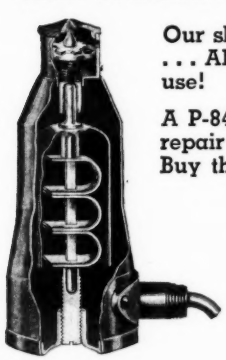
High above the Nation's home fighting front float deadly barrage balloons, always on the alert to trip oncoming enemy bombers. Below, in countless buildings, NEW YORK Air Valves are constantly fighting fuel waste on the home heating front.

For 44 years NEW YORK Air Valves have been helping to safeguard the nation's fuel. They are performing this same service in this present day of fuel shortages.

When examination shows improper venting to be the cause of heat waste, the heating man who installs NEW YORK Air Valves finds that they provide immediate increased heating efficiency and economy. Every time you replace with a NEW YORK Air Valve, you help the Nation conserve its fuel supply . . . you help your customers save heating dollars . . . you help yourself to profits necessary to a continuance of your business.

Safeguards

THE NATION'S HOME *Heating* FRONT



Our skilled workmen are busy filling war contracts and sub-contracts . . . AND producing the famous NEW YORK Air Valves for home front use!

A P-84 rating will secure these valves for replacement or emergency repair jobs, as well as for government approved building projects. Buy them from your wholesaler.

"Nyavco" ORIFICE CONTROL AIR VALVE

Maintains top heat in *every* radiator, even when burners are turned off. Perfect for hand fired coal burning jobs.

"MANHATTAN" TYPE

Hundreds of thousands of "MANHATTAN" and our other competitive air valves, such as Air-Out, Air-X-Pel, No. 476, No. 621 and No. 100 are now giving reliable, long-term service throughout the United States.

NEW YORK AIR VALVE CORP.

611-621 BROADWAY, NEW YORK, N. Y.

Thanks:
I have been at the plumbing and heating business, both house and ship plumbing, for 46 years, and I feel that I need the benefit of Domestic Engineering to keep me posted on current events. . . .
A. Williams,
Greenville, S. C.

Between Ourselves

Highlights . . . . and Slants . . . . on our industry's month

Convention Travel

Washington, D. C., December 15.—Abandonment of meetings and conventions that will not contribute in an important way to winning of the war was urged today by Joseph B. Eastman, director of defense transportation.

Responding to requests for the attitude of the Office of Defense Transportation on the holding of conventions involving intercity travel, Mr. Eastman said in a formal statement that individual associations must make their own decisions. He indicated, however, that no such gatherings would be justified, in view of war burdens on the transportation system, unless they would help to shorten the war.

The ODT director declared that "every convention or meeting canceled, even if it would have involved travel by only a comparatively small number of persons, will mean a decidedly worthwhile saving of transportation facilities and will itself constitute a contribution to the war effort."

● ● ●

From Honolulu

To the Editor:

Received your letter the other day and wish to thank you for writing me, as

Leonard J. Hickman

letters received way out here at "the crossroads of the Pacific" are very welcome.

I could make several guesses as to the good friend who so kindly has given me such an appropriate Christmas present as a year's subscription to DOMESTIC ENGINEERING and, as they say here in the Navy, it will be "right on."

It takes about a month for packages, newspapers and 3 cent mail to get here from the States, but will be looking for my first issue in due time.

I am now in the engineering department laying out and drafting plumbing and piping installations for work to be installed in some of our largest ships. I like it and it is so interesting. A fine well lighted, modern drafting room and a good lot of men to work with here in Design Section.

Leonard J. Hickman,
Naval Cantonment,
Honolulu, T. H., 53 — 822.

● ● ●

U. S. Senator Comments

To the Editor:

With the coming of this fateful and world-shaking clash of arms to America, there has arisen a great and difficult problem of economic supply—a problem which has its ramifications in every conceivable aspect of our lives: We must work longer; we must work harder; we must curtail civilian consumption; we must institute controls and priorities; and in many cases we must ration various products and services. We must do all this—and more—if we are to overcome those vaunted forces of tyranny and aggression which threaten to envelope the world. All of this is obvious to the citizens of America. But there is one outstanding aspect of this tremendous effort which is not so completely understood by the people of America as a whole. That is the complex manner in which and the very great extent to which the entire program is interrelated and interdependent.

As an example, let us consider the commodity of oil. Many there are who maintain that they cannot understand the necessity for the rationing program with respect to oil—and they are for the most part sincere in their statements. But when we consider the fact that oil is the hub of the wheels of war production and war prosecution, the situation can be made immediately more clear.

Let us, for the sake of simplicity, divide that vast demand with which the oil industry is now faced into three distinct segments—the war production segment, the war prosecution segment, and the civilian needs segment—to determine just how and to what extent oil consumption is involved in the broad aspects of the present day.

War Production: In this field oil is necessary in the operation of the machines which mine or otherwise produce

James J. Davis
Senator from Pennsylvania

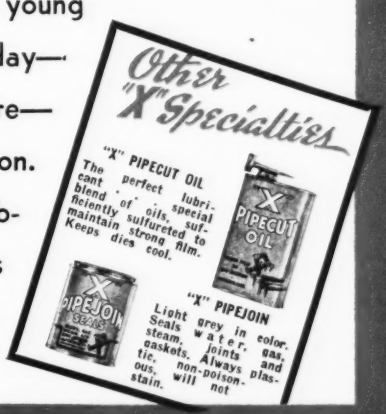
the raw materials which are to be shipped to the factories. Oil is necessary in large part to the operation of the many types of vehicles which transport these raw materials to the factory. Oil is an essential element in the operation and maintenance of the machines which shape these raw materials into the tools of war. Oil is also required in the transportation of workmen to and from the factory, and in the shipping of the finished war products to the embarkation and training centers. This then is a brief picture of the oil needs of the production phase of the war effort. When we consider the thousands of plants, mines, trains, trucks and the millions of men involved, we can get some concept of the vast quantities of oil which

(Continued on Page 35)

NOW—NEW BOILERS ARE UNAVAILABLE for CIVILIAN USE!
X LIQUID
REPAIRS LEAKS IN STEAM & HOT WATER SYSTEMS & HIGH & LOW PRESSURE BOILERS
X FLUSH
REMOVES GREASE, OIL SCALE from HEATING SYSTEMS
STOPS FOAMING
X RUSTOFF
WATER INHIBITOR
KEEPS SYSTEM CLEAN
IT'S UP TO YOU!

TO KEEP PRESENT HEATING PLANTS GOING

"X" Products have been keeping old boilers young for many years. They are still available today—when they are needed more than ever before—to help keep present heating plants in action. Now, with fuel rationing adding to the problems of domestic heating, boiler efficiency is a "must." Look to "X" to help with today's patriotic job.

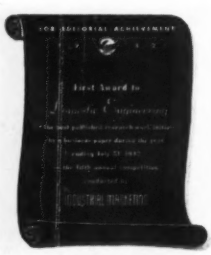

Other "X" Specialties
"X" PIPECUT OIL
The perfect lubricant blend of oils specially selected to efficiently maintain sulfureted strong film. Keeps dies cool.
PIPECUT OIL
"X" PIPEJOIN
Light grey in color. Seals water, steam, gas, joints and gaskets. Always plastic. non-poisonous. will not stain.

"X" LABORATORIES, INC., 25 WEST 45th ST., NEW YORK

You are MAKING History...

EVERY manufacturer in the plumbing, heating and air conditioning industry today is making history. Production performance resulting in Army and Navy "E" awards . . . shortcuts to all-time highs in efficiency . . . 100% participation in bond-purchase plans . . . ingenious conservation of strategic materials and manpower . . . outstanding achievements in the development of simplified lines . . . these are just a few of the many history-making accomplishments by members of the plumbing, heating and air conditioning industry.

It is not enough to make history these days . . . it is equally important to *record* it. With events transpiring at lightning-like speed, new problems, new demands and new goals are forcing the achieve-



. . . FOR OUTSTANDING EDITORIAL ACHIEVEMENT AND CONTRIBUTION TO THE WAR EFFORT!

DOMESTIC ENGINEERING is making history in addition to recording it. The plaque at the left shows first award to DOMESTIC ENGINEERING in a nation-wide competition among business papers. The honor was conferred in recognition of the value of DOMESTIC ENGINEERING'S priority information service and priority Flow Charts extending over the critical months of the priority system . . . which constituted the first published effort to demonstrate graphically the relationship existing between priority divisions of the War Production Board and the plumbing and heating industry. Thousands of these charts were used by W.P.B. officials, branch managers and field representatives in their work of understanding and explaining to manufacturers, wholesalers and contractors the operation of the priorities system.

Record the Progress of Your War-Time

But are you RECORDING It?

ments of yesterday into the background. Unless your history-making accomplishments are recorded *as they occur,* they may go unnoticed and important benefits will be lost. These benefits can have a definite postwar significance for you.

A month-by-month record of your activities and accomplishments will serve to maintain your position with your customers whom you may be able to serve only on a limited basis at this time, but upon whom your future business will depend . . . it will have tangible benefits not only for your company but for the war effort itself. Record the month-by-month history of your contribution to the war program in DOMESTIC ENGINEERING . . . the publication which is read by Washington as well as by members of the plumbing and heating industry . . . the publication which is recognized for its own outstanding editorial achievements based upon its contribution to the war program. Record in DOMESTIC ENGINEERING your history as an all-time proof of your major accomplishment and your first line contribution to the preservation of the American way of life.

DOMESTIC ENGINEERING

Serving the Plumbing and Heating Industry for More than 53 Years

1900 PRAIRIE AVENUE, CHICAGO, ILLINOIS

Efforts in . . .

THERE'S NO

Rationing of Good Will

These Eljer salesmen symbolize our relations with you, our customers. These relations are as important to us now as ever. We are eager to have your continued good will. Our present policy, therefore, is:

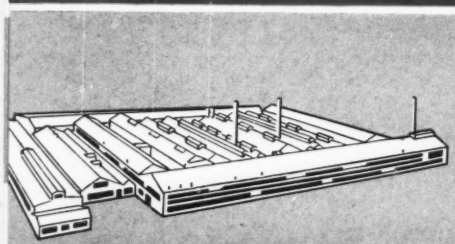
1. To continue supplying fixtures for our Government to the best of our ability.

2. To supply as far as possible the needs of the regular trade where government regulations permit.

3. To keep on the job all our representatives who are not in the Services. These men are making as many regular contacts as possible under present travel restrictions, to help serve plumbing contractors and wholesalers.

ELJER CO.

FORD CITY, PA.



Normally

PLUMBING FIXTURES ARE OUR EXCLUSIVE BUSINESS

. . . 15 acres of it!

Between Ourselves . . .

(Continued from Page 30)

must go to satisfy this single portion of the war effort.

War Prosecution: Here we must consider the oil requirements of our large and modern war machine in action. Ships, planes, tanks, even guns require oil in considerable quantities. Oil is necessary to make the engines turn; it is needed to keep precious parts from wearing; it is necessary to maintain the smooth, rhythmical operation of all parts of the machine involved. Thus it is apparent that the thousands of planes, the thousands of tanks, and the millions of guns which comprise our war machine require oil in an amount which defies the imagination. And when we add to this the need of our fighting allies, the picture of this demand on oil becomes truly overwhelming.

Civilian Needs: In this country—the most advanced country in the world from a technological point of view—millions of homes and thousands of industrial plants are operated and heated with fuel oil; tens of millions of household machines — refrigerators, washing machines, furnaces, lawn mowers, and countless others—all require oil for their proper functioning and maintenance. When we attempt to add all of these requirements together, we can be sure that the final figure here would be geometric.

Now when we consider the composite picture, we are immediately impressed with the very complicated and challenging problem which this picture affords. It is an obvious impossibility to fully supply the needs of every segment of this tremendous demand. For that reason, rationing is essential. We can not ration the armed forces nor the war production plants, for to do that would be to invite disaster and defeat. We must, therefore, curtail the civilian consumption of oil, for the civilian needs is the only segment of this vast demand which does not have an immediate effect in the prosecution of the war. And since the successful prosecution of the war is the all-encompassing present day project of the American people, we must regard the fuel rationing program as a necessary expedient to the fast and final realization of that project.

I am of the firm conviction that once the American people get the composite picture of oil needs and oil consumption with respect to a successful war program, they can be relied upon to sincerely and effectively support the present fuel rationing program. For they well know that the little inconveniences which they are now asked to endure would be as nothing when compared with the suffering and privation which would be their lot in an Axis-dominated world.

James J. Davis,
U. S. Senator from Pennsylvania.

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Year's Building

New construction of all kinds in 1943 is estimated at $8,500 million by the Committee on Construction Forecasts of The Producers' Council. This represents a 37 per cent decline from the record peak of $13,410 millions estimated for 1942, but still is in excess of new construction during the pre-war year 1939. But even so, the program is still one of large projects of specialized types, not distributed over the whole country, and, therefore, not affording work evenly to architects, engineers and contractors.

These estimates for continental United States do not take into account any possible increase in construction costs, and assume that the announced WPB policy of reducing the war construction program will be carried out to a substantial degree.

(Continued on Page 94)

Fuel Situation

To the Editor:

We are grateful for the space you have allotted to the general subject of fuel oil rationing. The more publicity we can get along these lines the better it is for the general interpretation and acceptance of the fuel oil rationing program throughout the rationed area.

The plumbing, heating, and air conditioning industries have played a definite and important part in this specific program and we greatly appreciate their cooperation. The attitude of your publication toward the program and your personal spirit of helpfulness has been most valuable.

Joel Dean, Director,
Fuel Rationing Division, OPA.

● **The fuel oil situation is reaching its crisis because of cold weather and diversion of transportation facilities to war uses. Mandatory conversions, stove rationing and stepped-up stoker production are being advanced in an effort to alleviate the condition. Coupon values in the East have been reduced. This issue, continuing the emphasis on conservation, gives views and suggestions that will remain significant throughout the year.—Ed.**

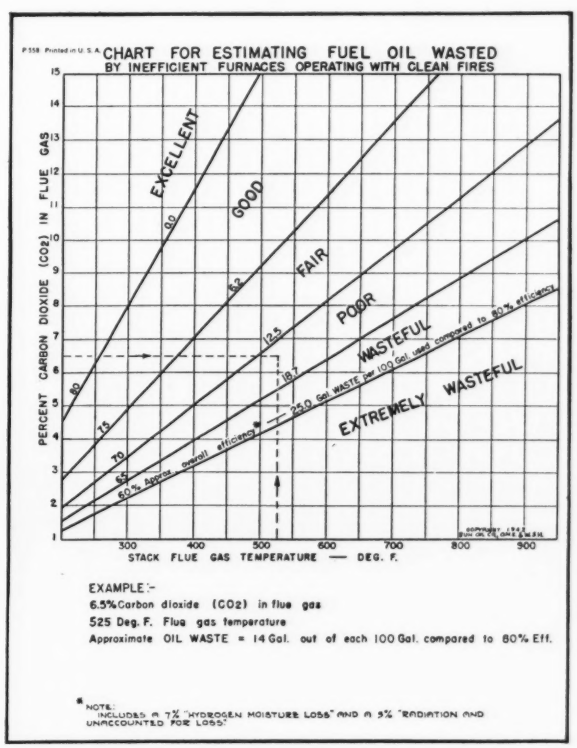


CHART FOR ESTIMATING FUEL OIL WASTED
BY INEFFICIENT FURNACES OPERATING WITH CLEAN FIRES
PERCENT CARBON DIOXIDE (CO2) IN FLUE GAS
STACK FLUE GAS TEMPERATURE — DEG. F.
EXCELLENT
GOOD
FAIR
POOR
WASTEFUL
EXTREMELY WASTEFUL
80
75
70
65
60% Approx. overall efficiency
8.2
12.5
18.7
25.0 Gal. WASTE per 100 Gal. used compared to 80% efficiency
EXAMPLE:-
6.5% Carbon dioxide (CO2) in flue gas
525 Deg. F. Flue gas temperature
Approximate OIL WASTE = 14 Gal. out of each 100 Gal. compared to 80% Eff.
NOTE: INCLUDES A 7% "HYDROGEN MOISTURE LOSS" AND A 5% "RADIATION AND UNACCOUNTED FOR LOSS"

Chart designed by oil company (Sun) to show relationship of stack temperature and flue gas carbon dioxide to heating plant efficiency. Contractors find there is no substitute for instruments in heating plant analysis

"TOLEDO"
TRADE-MARK REGISTERED U.S. PAT. OFFICE

TOOLS HAVE GONE TO WAR.

We are sorry if we are unable to serve our old customers, the plumbers, steamfitters and engineers of America, as we have in the past, but we are indeed proud to have "TOLEDO" tools chosen to take such a prominent part in America's war effort.

Thousands of "TOLEDO" tools and dozens of "TOLEDO" power pipe machines are leaving our plant each month for the various armed forces and shipyards and are assisting in the construction of America's new war plants.

"TOLEDO" tools have gone and are going to our many outposts in this World War, Midway Island, Australia, Hawaiian Islands, Alaska, Newfoundland, Africa, and the British Isles. Here in America hundreds are being shipped to new air bases, army camps, naval bases, shipyards, ordnance plants, and our new synthetic rubber plants.

Yes, "TOLEDO" tools have gone to war and we are proud of this fact. We know "TOLEDO'S" hundreds of thousands of old-time users will understand and excuse us when we say prompt shipments cannot be made of orders with low priority ratings, for America's war orders of course have the right of way.

When Victory comes and peace time projects are again resumed, "TOLEDO" will once more be ready to serve you as in the past.

Safeguard your tools, give them the best of care, regrind dies when dull and order repairs only when necessary. We will try and take care of your needs.

THE TOLEDO PIPE THREADING MACHINE CO.
TOLEDO, OHIO NEW YORK OFFICE, NO. 2 RECTOR ST. BLDG.

"TOLEDO"
MAKERS OF FINE
PIPE TOOLS, POWER PIPE MACHINES, VISES, BENCHES

Make This Year 194-V

"THOUSANDS of individuals connected with our industry will serve in the fighting lines. Our industry as a group will reenforce the fighting lines through production lines. . .

"In the war period ahead our industry will occupy a position as prominent as the value of its services to the war needs and to the most essential civilian needs. Plumbing and heating services are vital alike to the war effort and to public health. The task ahead is for our industry to make Contribution Number 1—Production—as quickly as possible, and always in maximum conformity to the other contributions—Reclamation, Conservation, Simplification and Substitution."

The above statement appeared on this page just one year ago in the January, 1942 issue, which introduced the Victory Program for our industry.

A year's retrospect proves that our industry has carried forward this Victory Program very creditably indeed. . . especially in regard to the production of plumbing and heating installations in three important fields—cantonments, industrial plants and war housing. Our industry's achievements in collection of scrap, in material conservation and substitution and in product simplification are too well known and too extensive to be reviewed here.

At this time of year's beginning, however, it is a good idea to reappraise our industry's position and our own efforts to determine what we can do in 1943 which will best help in gaining victory for this country. In making such a reappraisal, and in drawing conclusions therefrom, three considerations are kept in mind.

The first is that the nation has "turned the corner" in this war, according to Government leaders; the job now is to assure victory in the shortest possible time. The second is that plumbing and heating now are recognized wartime essentials. The third is that a proper perspective for the year cannot be gained without giving all due attention to Washington's increasing consciousness of the need for balance between essential civilian activities and so-called exclusive war activities. In total war such as we are now engaged, the line of demarcation between essential civilian and exclusively war activities fades or disappears entirely. A keynote of the coming year will be balance . . . of manpower and materials . . . between these two types of activities.

The first conclusion to be drawn from such a reappraisal is that there are both new and continuing opportunities to help the war effort, in a plumbing and heating way. Where do these opportunities lie? For example:

(1) Current expansion of cantonments is not ended.

(2) While some authorities believe that industrial construction will decline in 1943, it would be a mistake to assume that the present limited building program will not be extended. Programs earlier conceived have since been changed considerably, and it is reasonable to believe that the present limited program will, in turn, be changed.

(3) More important, perhaps, than new industrial construction is the market for additions to, and equipment for, existing plants. Some of the present manufacturing structures were erected so quickly that needed equipment could not be installed.

(4) Fuel conservation will be more necessary in 1943 than it was in 1942, and heating and plumbing contractors will find an educated market for fuel conservation devices and services. Oil supply routes may be adjusted to provide better distribution, but present indications are that our expanding expeditionary force will require such tremendous resources that there cannot be enough oil to supply all needs. The supply of gas for heating is scarcely less critical. American consumption is straining at the seams of production in fuels as in other commodities.

(5) The tremendous present migration to defense areas will involve, by July 1, the building or remodeling of dwellings for more than a million families. WPB realizes the need for these dwelling units (about equally divided between new and "converted" structures) and considers their provision a principal objective. This market offers perhaps the greatest single business potential.

(6) Finally, but most important, the essential job of maintaining present heating and sanitary systems in working condition must be continued. When new installations cannot be made, the maintenance and repair job automatically increases in both size and importance.

The plumbing and heating industry can, should and must give its best efforts to such activities as those outlined above, despite difficulties of materials and manpower. These jobs are vital to the war effort. Only by pushing them to the limit can our industry play its full share in making this year 194V.

Our Industry
January, 1943

In using the headline "Make This Year 194-V" we are emphasizing that everyone in our industry and in our nation can make this his own individual V-year. There is an increasing recognition among those who are concerned with long-term planning that, although actual shooting may stop upon a declaration of an armistice, the factors leading to a condition of peace are well defined and definitely discernible considerably in advance of "cease firing" orders. This observation takes on increased significance at this, the beginning of a new year, in the light of our chief executive's recent statement that the tide has turned.

EVENTS of 1942 and Affect Your Business

THE greatest single event of 1942 for the plumbing and heating industry . . . for any industry, in fact . . . was the war. All of the important trends and influences which changed our industry were direct results of the war. And because the war continues, the basic business factors of 1943 will be similar to those of 1942; the past year's experience, however, will react in different handling of these same important questions.

Some of the pages on priorities that appeared in Domestic Engineering during 1942. Through this assistance, contractors were able to write "with the terms of which I am familiar" on their purchase orders . . . and mean it

A typical priority round table (or round bench), at which W. Walter Timmis, then Plumbing and Heating Branch chief, discussed priority problems with members of the Michigan Assn. of Master Plumbers

PLUMBING and heating wise, the materials shortage was the war's greatest effect in 1942.

The materials shortage was expressed in "priorities." Plumbing and heating contractors, wholesalers and manufacturers will remember priorities as the most vivid characteristic of their business in the past year.

Two days after Pearl Harbor, the Plumbing and Heating Industry Advisory Committee met with W. Walter Timmis, then chief of the Plumbing and Heating Branch of OPM, to discuss ways in which our industry could cooperate most effectively in the war. At this meeting Government officials outlined principal orders which were then being formulated. Copper was revealed to be the most scarce of all of the common plumbing and heating materials. Up to this time, priority orders had been piled upon priority orders, with confusion the net result. Industry members did not know how to obtain materials for important jobs.

With each of the ... a... coming year. Each is ... fo... interviews with key ... fi...

How They May in 1943

Because many priority orders were issued mid-month, and because many orders needed special interpretations, Domestic Engineering has made various special bulletins, "Flow Charts" and other aids available to subscribers as especial war-time services. Here are a few examples

bruary issue, DOMESTIC ENresented the "Flow Chart of r the Plumbing and Heating hich was the first graphic of all the principal priority ting any industry. More copies of this Flow Chart buted to contractors, wholeand manufacturers.

ring this month, manufacturers began enrolling in large numbers in the Production Requirements Plan. During the year more and more companies came under this plan, until it was the universally accepted method for manufacturers to use in obtaining materials.

The long-awaited plumbing and heating repair and maintenance order (P-84) was issued in March. The Plumbing and Heating Branch had early expressed the agreement that plumbing and heating repairs were vital and had attempted to provide repair materials through levelling of inventories and through an informal arrangement in which manufacturers could be given material on the basis of purchase orders they had received which were marked "for maintenance and repair." P-84, representing a victory for our industry for the branch, substituted an A-10 rating for the "for maintenance and repair" statement on purchase orders. This rating, while sufficiently high when instituted, soon became useless to manufacturers for the purpose of obtaining raw materials. However, those who were operating under the Production Requirements Plan were able to obtain allocations upon the basis of the recognized importance of repair and maintenance.

Repair and Maintenance

At present, P-84 is up for revision. Under the Production Requirements Plan, and under the forthcoming Controlled Materials Plan, allocations and allotments can be given without reference to ratings on purchase orders at the consumer level. The ratings will continue to be used, however, in order to prevent a "helter-skelter" system of distribution at this level.

Furthermore, WPB continues to recognize the importance of repair and maintenance and Donald Nelson recently stated that top ratings (AA-1) will be granted for essential repair needs. This does not mean, of course, that all plumbing and heating repair materials wil be given that rating. But the outlook is good for a continued flow of necessary parts, in spite of hardships manufacturers experience from simplification and price orders.

The month of April brought two orders which, while not priority orders, rank equally in importance with P-84. These were, L-41 (the "stop building" order) and L-79 (the "freeze" order on plumbing and heating products). Both of these orders created considerable confusion within the industry and practically stopped work until their provisions were explained. Next month, however, L-79 was amended to make it more understandable and more workable.

The May issue of DOMESTIC ENGINEERING contained "Materials Flow Chart No. 3," which explained these orders and furnished descriptions of all other principal orders affecting our industry.

In April also was issued L-56, which cut deliveries of fuel oil.

In June, the War Production Board attempted to institute a system of allocation symbols which were to form the basis for direct allocation. This plan was found inoperative and has been discontinued with the exception of purchase orders for copper products. **The new Controlled Materials Plan is ex-**

articles summarizing events of 1942 are included predictions for the followed by the latest news on the topic, and many are accompanied by figures. This article on priorities is followed by latest news on CMP

pected to be the instrument for direct allocation.

In spite of overlapping, legalism and other difficulties the plumbing and heating industry has worked to understand and to abide by WPB orders. When the letter of an order has lacked immediate interpretation our industry has attempted to follow its spirit until interpretations were available.

Further the rank-and-file of our industry has been patient with seeming inequities, recognizing the difficulties of the Plumbing and Heating Division and realizing the need of critical materials for the war effort.

Scarcity of new equipment made repair and maintenance of home sanitary and heating systems doubly important. Here are some of the 1942 Domestic Engineering articles concerned with this problem

EVENTS *of 1942 and How They May Affect Your Business in* **1943**

What will happen to distribution when manufacturing is managed by Controlled Materials Plan? P&H Division officials suggest a . . .

Little CMP for Sales?

WASHINGTON, D. C., (Special)—Plumbing and heating officials point out that the Controlled Materials Plan in its present form has no direct effect upon the wholesaler and the contractor except that it assures them of various amounts of plumbing and heating equipment to be manufactured.

CMP does not control distribution. To implement the plan, some officials indicate the need for a "little CMP" which would evenly distribute the equipment made available by the manufacturers' CMP.

This control of distribution may be attempted through revisions of P-84 and L-79. Some officials of the Plumbing and Heating Division believe, however, that a new instrument will have to be created if really effective control is to be realized.

"A meter must be placed somewhere along the line of distribution," one official told DOMESTIC ENGINEERING. There is a need for an instrument that will direct end use of a product according to essentiality. At present, for instance, it is possible for the consumer to replace a furnace where it is not absolutely essential. Equipment is being installed on new jobs when there is a greater need for it in necessary replacement.

A "little CMP" would allocate equipment according to essentiality. The official points out that there is still no accurate estimate available of the amount of plumbing and heating equipment manufactured for replacement purposes. Estimates compiled by the Plumbing and Heating Division vary from 15 to 85 per cent of products manufactured. In order to operate a CMP for the distributor it would be necessary to know the percentage of equipment that goes into repair and replacement, as well as all other essential uses.

The "little CMP" is regarded by distribution experts of the Plumbing and Heating Division as a possibility in 1943. Where along the line of distribution the control should be placed is now under study. Officials rule out control at the retail end at the start because of the greater number and type

(Continued on Page 74)

Joseph T. Kelly, chief of the new Inquiries Section, handles hundreds of questions from the industry each week on priority, procurement and production problems

In New Year statement Division chief outlines problems of our industry and activities of Govt. Urges full cooperation

Wilber Interview

Washington, D. C. (Special)—There is no blue print available of the controls and regulations which the plumbing and heating industry may expect in 1943. There are many straws in the wind but their direction is difficult to predict completely.

This is the situation as seen by Joseph F. Wilber, director of the Plumbing and Heating Division of WPB.

Mr. Wilber believes that the Controlled Materials Plan will have a stabilizing effect upon the plumbing and heating industry.

Under the Production Requirements Plan, he points out, the Plumbing and Heating Branch had to guess at the amount of materials the industry would need. The WPB requirements committee had to guess at the amount of materials available. Under CMP and refinements which are expected to follow after the third quarter when all industries will come under the plan, the plumbing and heating industry will

(Continued on Page 74)

WAR PRODUCTION BOARD
WASHINGTON, D. C.

December 31, 1942

IN REPLY REFER TO:

Article for Publication in Domestic Engineering

I am glad to take this opportunity to address the Plumbing and Heating Industry, through your publication, relative to the present activities of the Plumbing and Heating Division (formerly the Plumbing and Heating Branch).

As the Industry realizes, the Branch was organized under my predecessor, Mr. W. Walter Timmis; and under his leadership it accomplished great strides in the difficult task of converting Industry to a war basis.

But now the war program is entering a new phase in which (1) critical raw materials must be even more stringently controlled, and (2) all essential manufacturing must be tailored to fit the raw materials supply which will be available. These two objectives are to be obtained through a combination of the new Controlled Materials Plan, and the existing priority system.

The Controlled Materials Plan gives us new duties, involving close contact with the several claimant agencies and with all elements in the Industry. We shall have recourse to the Industry Advisory Committees and Industry consultants for the information and advice which we will need. Our objective is to balance military and essential civilian requirements with the production of raw materials.

As far as is possible under the exigencies of war, the civilian economy is to be preserved as a partner in the direct war effort. Equally significant, WPB realizes that minimum civilian needs are as important as military needs. Sanitation must be preserved as a protector of the national health and morale. The heating of homes and working places is similarly vital.

Giving concrete expression to this view, WPB has announced that high ratings will be applied to essential repair and maintenance. Naturally, there are degrees of essentiality, and the Division is now working on the problem of identifying and classifying most essential repair and maintenance needs.

Other problems which concern the Division and the Industry equally are fuel conservation, simplification of products, concentration of manufacturing where desirable, and salvage, reclamation and scrap collection.

To me, it is significant that your editorial columns in the past have been largely devoted to the topics with which we have dealt. This has given Industry members the opportunity to adapt their businesses to the national trends and policies, and thus to cooperate to the fullest on such essential jobs as the construction of cantonments, industrial plants and housing, the conservation of fuel, and the repair and maintenance of all plumbing and heating facilities.

The continued full and patriotic assistance of all Industry will help to carry through this difficult period, and contribute most effectively to victory.

Very truly yours,

Joseph F. Wilber, Director
Plumbing and Heating Division

$Prices

EVENTS *of 1942 and How They May Affect Your Business in* 1943

NO. 2 IRRITANT of the business year was price regulation. First came a series of individual price schedules set at the manufacturer level for specific types of products. Second, was issued "Gen. Max," the order which was designed to cover practically all forms of trade. Contractors experienced great difficulty in attempting to abide by this order, inasmuch as it was mainly applicable to products, not service or installations. No provision was made for permitting the contractor to include in his installed price the pay increases to journeymen placed into effect after March, 1942.

At a later time, an order covering consumer services was issued, but OPA interpreted that this order did not include the building field.

MPR 251, covering the permissible price of every plumbing and heating job from the changing of a faucet washer to the installation of radiation in a large building, was issued to go into effect November 25. This order permits contractors to include in their installed prices wage increases in effect between March and July 1. Over-the-counter sales (not including installation) still are covered by the General Maximum Price Regulation. DOMESTIC ENGINEERING for December contains a chart showing price orders affecting the plumbing and heating industry.

With the resignation of Leon Henderson as price administrator, some persons have assumed that the whole price system would be changed. Some have favored a system under which all retailers would be permitted definite percentage of mark-up above cost. Others have advocated flat ceilings which would be the the same for all sellers.

The resignation of Mr. Henderson did not appear, at press-time, to indicate a movement in either of these two directions.

FUEL CONSERVATION . . .

for coal, oil and gas, will increasingly be necessary. Needs of war production & AEF make fuel saving.....

Henry S. Norris, chief of the oil conservation unit of the Plumbing and Heating Division, and his staff look over the conversion story told the industry in December Domestic Engineering. Left to right: Mr. Norris, Charles S. Howard, Albert S. Hess, Carl M. Schaffer and A. L. Smith

Bigger Field in 194-

WHEN the first "scare" on fuel oil in the spring of 1941 turned out to be unfounded, the heating industry and general public was loathe to accept the warnings of the Spring of 1942.

This time, however, Government officials foresaw the strain which war would bring upon fuel oil transportation. Tanker sinkings off the East Coast, for example, badly disrupted the established means of transportation and later the petroleum demands of the AEF in Africa brought severe strains upon supplies.

Both the public and industry, alike, have been slow to accept the need for changing over heating systems from automatic to hand-firing. The supply of stokers has not been sufficient to take care of conversions in residences.

According to OPA, the need for these conversions will continue, however, during the coming year, and the public will be assured that conversion is a "duration" program. This is one field for the heating and plumbing contractor during 1943.

It would be a mistake, however, for the contractor to see conversion as his main heating opportunity for the coming year. A far larger field exists in what is called "conservation," which means to bring heating plants to top efficiency and to curtail heat losses to the practical minimum. The need and opportunity for this work definitely will continue for the duration, and the contractor should consider users of gas and oil as prospects equally logical with oil users.

Lewis Smith, chief of Heating Section of the Plumbing and Heating Division, believes that healthfully heated homes contribute their share to the war effort. Has the job of keeping heating equipment production up to levels required for war factories and homes of war workers, as well as all essential civilian uses

Already in many sections gas for home heating is as short as oil. Since gas is difficult to ration, recourse has been taken to WPB limitation orders effective upon the utilities.

While the potential supply of coal is practically unlimited, and while the Government insists that coal will be available (any other attitude would discourage conversion), coal does involve problems of both manpower and transport. Every means is being taken to increase extraction of coal, and consumers have been urged since last spring to purchase coal in advance and store it.

To assume that the fuel shortage will be limited to oil is to make the mistake of those who, at the beginning of the defense program, saw copper as the only metal shortage. **The contractor who wants to be of greatest value to his cus-**

tomers should sell conservation service for all fuels.

Since heating plant repair, maintenance and improvement represents only one-half of the conservation job, many heating contractors are entering the field of insulation or aligning themselves with insulation contractors who can work in close contact with them.

Interviews

WASHINGTON, D. C., Special—The conversion situation is improving but is still a long way from the objectives which the Government has established as necessary to relieve the fuel oil shortage and to eventually win the war.

Continuously increasing military demands, chiefly arising from the North African campaign, have placed new burdens on suppliers. It is now no military secret that lack of storage facilities in North Africa held tankers there over their normal turn-around and accounted to a great degree for the gasoline and oil crisis in the East during the past month.

Joel Dean, director of the Fuel Oil Rationing Division, pointed out several viewpoints he calls popular misconceptions that are slowing up the conversion program. The fallacies taken up by Mr. Dean were the following listed points:

1. There is a prevailing idea that transportation facilities will improve. There is every reason to believe, according to ODT, that they will deteriorate because of increasing war demands.

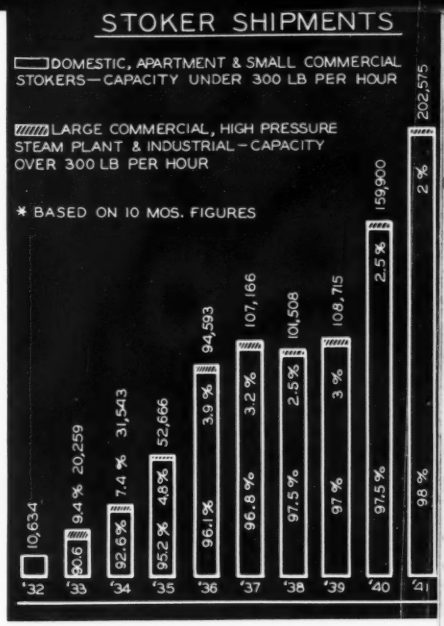
2. Conversion is not a temporary expedient. It is a duration program.

3. The new oil pipe lines to the Middle West and East will not, as some believe, relieve the situation completely. Every gallon of the 300,000 barrels daily which will flow through these lines will go for military use!

4. Large oil supplies in one city or area do not indicate a plentitude of fuel oil in the entire rationed area.

L. H. Albright, of the Office of the

(Continued on Page 66)



This chart shows stoker production for 1942 compared to previous years. See story below for 1943 production and sales outlook.

Stoker sales prospects good as WPB urges rush production of big quotas

THE outlook for stoker manufacture and retail sales is excellent for the rest of the winter, Henry S. Norris, chief of the conversion equipment unit, Plumbing and Heating Division, told DOMESTIC ENGINEERING at press-time.

The Division is attempting, under recently liberalized orders issued by WPB, to get as much conversion equipment, as possible manufactured and distributed within the next 60 days—the critical period of the present heating season.

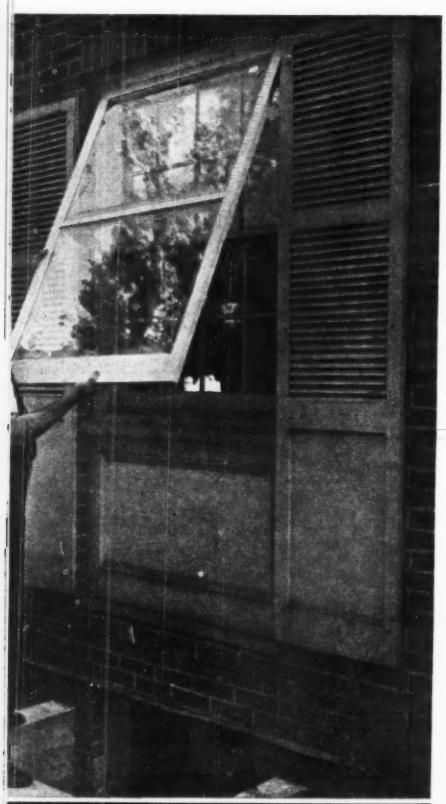
Production of Class A stokers (above 60 lbs) will reach 4,000 units a month, Mr. Norris estimates. At the present time the stock of available stokers is going to essential applications only.

During the recent cold snap in New England, 400 applications for stokers were made in one day in the Boston area. Even if that number of stokers

(Continued on Page 75)

Domestic Engineering pages from May, 1942 contain a wealth of practical suggestions on fuel conservation — some which the contractor may use in setting up a fuel saving service, and others which he may pass along to home owners for the better operation of their plants

HINTS, *via Contractor, to*



THE photographs reproduced herewith, and on the front cover of this issue, were taken at the Research Home of the Institute of Boiler and Radiator Manufacturers, and at the Warm Air Research House, in Champaign, Ill. The University of Illinois has issued them to assist home owners with simple suggestions which will save fuel. Home owners may be shown this article and their attention called to the captions explaining the conservation suggestions. —Ed.

Financing

Washington, D. C., Jan. 2.—Conservation of scarce fuel oil supplies through fuel-saving installations represents a method by which American home-owners can lend important assistance to the war effort during coming months, Federal Housing Commissioner Abner H. Ferguson declared today.

With wartime needs having cut sharply into available supplies of heating oil, it is all the more imperative that home-owners still using fuel oil convert their heating equipment at once to permit the use of coal, Mr. Ferguson asserted. If such conversion is not possible, the home-owner should act immediately to reduce his fuel needs by installing insulation, weatherstripping, or storm windows and doors, the Commissioner said.

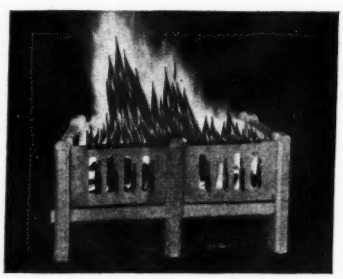
Such operations can be carried out quickly and at relatively little expense, the Commissioner pointed out.

In order to facilitate fuel-saving measures of this type, the War Production Board recently extended until Jan. 1, 1944 its exemption of them from Conservation Order L-41. The exemption applies to the conversion or substitution of heating equipment to permit the use of fuel other than oil, electricity and gas, and to the installation of insulation materials, air cell pipe coverings, weatherstripping, and storm windows and doors. The exemption means that such work may be undertaken without the specific WPB authorization generally required under Order L-41.

If the home-owner lacks ready funds to pay for such improvements, financing is available under the FHA's Title I plan from private lending institutions in all sections of the country, Mr. Ferguson said. Title I loans for these purposes may run for as long as three years, to be repaid in equal monthly installments.

The installation of storm sash and doors can save as much as 20 per cent of the fuel otherwise used in a home. At the same time the home is made more comfortable due to the increased temperature of the windows, and cleaner because it cuts down the infiltration of soot and dirt around the windows. Top photograph at the left shows W. S. Harris, special research associate, hanging windows in preparation for a fuel-saving winter

One of the easiest ways and one of the most resultful ways of conserving fuel is by insulating the attic. In the bottom picture at the left H. A. Elliott, student assistant, is demonstrating how wool-type insulation should be laid between ceiling joists



Ceramic Grates

Washington, D. C., Dec. 27.—At least one million ceramic fireplace grates will have been made in time for installation in American homes this winter, it was announced today by the WPB Conservation Division, which assisted in the design and production of the new product. The ceramic grates are expected to save 30,000 tons of cast iron.

Faced with the problems of constructing a fireplace grate from a non-metallic substance, industrial experts devised a fireplace grate made of clay. Designs were submitted to the Conservation Division for grates to be made of clays and other heat resistant materials, fired and hardened at extremely high temperatures. (See photo.)

The ceramic fireplace grates are slatted, box-like affairs. They come in several shapes and sizes, weigh from 30 to 60 pounds, and have natural buff or glazed stipple finishes.

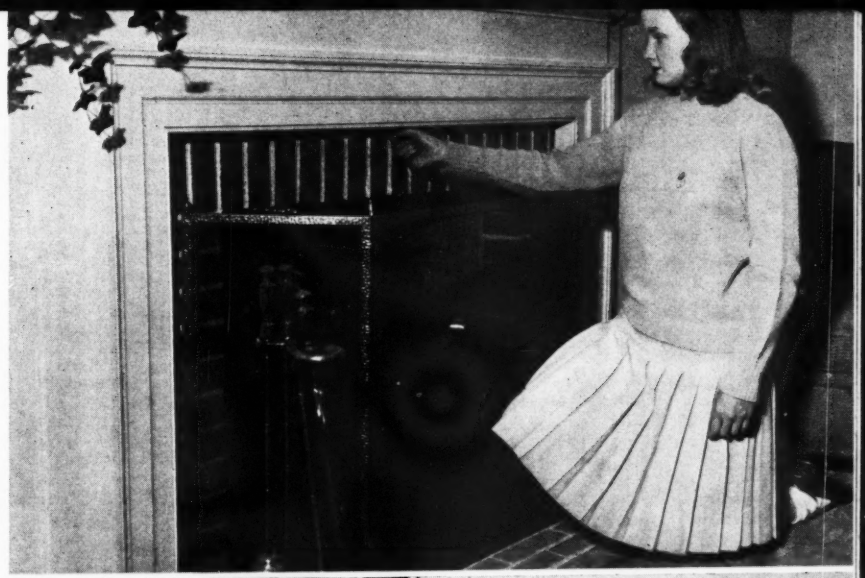
Coal, wood or charcoal may be used in the ceramic grate.

Owners

One of the surest ways of saving fuel is to be sure that fireplace dampers are closed when the fireplace is not in use. (An article on fireplace operation and servicing appeared in the December issue of DOMESTIC ENGINEERING.) If dampers are left open the draft will remove a big percentage of the heated air in the home

Radiators should be vented to make them operate efficiently. They should not—as they are at the right—be obstructed by furniture or by drapes. Metallic paints on the outside of the radiator are bottlenecks to the efficient release of heat from the radiator. An oil paint finish will increase the heat output of a radiator by 10 per cent over metallic paints

The ideal place for a heat regulating thermostat is about 30 in. from the floor, in zone of a sitting person, instead of at the usual eye level. This is especially important if children are playing on the floor. Prof. A. P. Kratz, associated with home heating research at the University of Illinois for a quarter of a century, demonstrates how easy it is to turn down the heat for the night. University tests have proved that a 10 degree reduction in heat during sleeping hours saves from 5 to 10 per cent of fuel



Stoker Outlook

FOLLOWING is a statement by Marc G. Bluth, secretary of Stoker Manufacturers Assn., on the opportunities for stoker sales offered by the oil burner conversion program and on other topics of current interest to the heating and plumbing industry:

After the treacherous attack on Pearl Harbor on December 7, 1941, if a stoker man had predicted that the stoker industry would be as active as it is today, his competitors and associates would have assigned him to the "booby hatch."

Nineteen forty-two witnessed so many changes and so many tremendous developments that a single industry, not to speak of individual members of any in-

(Continued on Page 79)

University of Illinois experts furnish suggestions on fuel conservation through photos and research at I-B-R Home. Also news of other current conservation topics

Left: Before and after sketches of the first home conversion job handled by NHA. It is noted that the addition of a few partitions, and the installation of new bathrooms and kitchens, provide the privacy that makes a home possible

Home Conversion Is a Big Job for 194-V

THE close of 1942 found all housing activity, both public and private, mobilized for war.

While hundreds of thousands of new dwelling structures are scheduled for building in 1943, perhaps the greatest field for the plumbing and heating industry will lie in the remodeling of existing buildings for use as dwellings for war workers.

The National Housing Agency has predicted that some 600,000 remodeled or "converted" housing units will be needed during the year. WPB has set up material quotas for 400,000 privately financed new units during the coming year, and additional thousands of units will be publicly financed.

During the past twelve months, a total of 278,000 new war housing units of all types were completed under preference ratings and paid for with both public and private funds. An additional volume of private housing serving war needs was completed in the early months of the year without priorities assistance. **When these figures for 1942 are compared with the objectives for 1943, it will be seen that housing construction and remodeling will bulk even more importantly to the plumbing and heating industry in the coming year than last.**

During 1942 the facilities of the FHA for assisting the financing of essential war housing were broadened by amendments to the National Housing Act. These amendments increased the FHA's mortgage insurance authorization for war housing under Title VI by a half billion dollars, and extended the terms of this title to cover all types of private war housing.

Also, in the past year, FHA insured loans for remodeling and repair under Title I in the amount of $155,000,000.

DOMESTIC ENGINEERING for November and December described fully the

(Continued on Page 75)

Materials Assured

A RECENT joint "declaration of policy" by WPB Chairman Nelson and NHA Administrator Blandford has reemphasized the need for a tremendous volume of war housing this year and has laid down the principles under which it will be provided.

The statement is of interest to plumbing and heating contractors, and our industry generally, because it removes fear that WPB might curtail the necessary building and home conversion program by refusing materials.

Two months ago, WPB did stop all processing of applications while the materials situation — particularly in lumber—was investigated. The present statement is a recognition of defense housing as an essential program. Plumbing and heating-wise, construction and remodeling of housing is probably the greatest business opportunity for 1943.

Some of the principal points in the joint declaration follow:

(1) Only material authorized by WPB may be incorporated in a war housing project. Other material may not be used, regardless of how it may be obtained. [On remodeling, the attempt is made to use materials that are available, thus giving the plumbing and heating contractor an opportunity to get rid of inventories not otherwise salable. WPB okay of the materials list submitted with the application would, of course, constitute the needed authorization.—Ed.]

(2) Procedure is adapted which will permit housing applications to be reviewed and processed promptly.

(3) NHA will take steps, where feasible, to make all projects conform with the latest conservation and occupancy regulations.

(4) WPB will allot materials by calendar quarters to meet specific approved programs.

Utilities units, including equipment, are standardized.

High Ratings

Washington, D. C., Jan. 2.—The remodeling or conversion of existing dwellings and structures to provide additional living quarters for war workers and their families in the critical war housing areas affords property owners

I. Q. Lord, new chief of the Programs Division, who was formerly in charge of construction statistics for the Bureau of Census. Mr. Lord will be head man in the preparation of future questionnaires to the plumbing and heating industry. Believes in eliminating unnecessary details from questionnaires: will make them simpler

an opportunity to participate in the war housing program on a remunerative basis, according to FHA.

The National Housing Agency, of which the FHA is one of the constituent units, is strongly encouraging such operations as an important segment of its program to meet the urgent war housing need. The NHA program embraces both privately financed conversion and the leasing of private houses and buildings by the Government for conversion into additional units.

In the field of privately financed conversion, the FHA offers a special Title I financing plan permitting loans of up to $5,000 which may be repaid over a period of as long as seven years. Conversion or remodeling projects financed by such loans must be located in the designated critical war housing areas and the additional accommodations produced must be rented to eligible war workers.

Evidence of increasing activity in privately financed conversion is given by the recent trend of applications for WPB priorities assistance for such projects. During the seven months ended November 30, the WPB approved preference rating orders for private conversion projects providing 30,000 dwelling units for war workers. Applications for such orders are filed with FHA field offices.

The National Housing Agency recently announced that the WPB soon will grant AA-4 preference ratings to privately financed conversion projects. This is the highest rating extended to housing construction of any type. At present, private conversion already receives an AA-4 rating for purchases of necessary soft-wood lumber, with an A-1-a rating for purchases of other critical materials.

Plan Improved

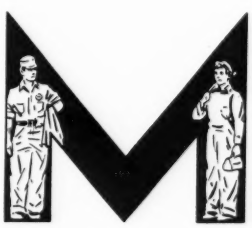
Washington, D. C., December 21—Liberalization of the contract under which the Government leases private housing and buildings through its Homes Use Service program for conversion into additional accommodations for war workers and their families was announced today by the National Housing Agency.

Designed to give still further benefits to property owners willing to cooperate, the lease alterations are expected to iron out difficulties encountered during the first few weeks of the program and permit the fullest use of existing structures in crowded industrial areas, according to NHA Administrator John B. Blandford, Jr.

"Under the revised procedures, the Government will be obligated to complete any conversion project it starts, or to restore the building to its original condition," said Mr. Blandford. "Moreover, if the property owner should desire further alterations than those deemed sufficient by the Government, he will be permitted to use his own funds for the purpose, participating in the same conversion project.

"If the Government takes over mortgage payments on a property and the mortgage is paid up during the life of the lease, the Government from that date on will add the amount of the mortgage payment to the monthly rental it pays the property owner.

"If the Government exercises its option to extend the lease beyond the basic seven-year period, during which conversion costs will have been amortized, the property owner will be paid previous amortization costs.



Manpower

THE contracting branch of the plumbing and heating industry experienced the manpower shortage long before it was considered a national problem generally.

The problem was answered in part by proprietors of small contracting firms closing their business doors and joining larger contractors on war projects. Also, numerous journeymen who had left the field returned to the job to help on war construction.

With the completion of many large industrial plants, naval establishments and army cantonments during the first months of this year, the journeymen shortage will automatically rectify itself in some degree.

Since the War Manpower Commission was given overall powers over both industrial labor supply and the Selective Service System there have been definite indications that manpower will be balanced somewhat along the same lines as materials. For example, selective service boards have been advised to give special consideration to men who do repair and maintenance work on essential facilities.

Standards of deferment are now being set up and will be administered through the new Manning Tables. Companies doing repair and maintenance work on essential facilities may fill out these Manning Tables—listing the skills of personnel and estimating the length of time necessary to train replacements. Copies of these tables may be obtained by writing to the nearest War Manpower Commission regional office, or to the national office.

SIMPLIFICATION of Products and Concentration of Industry . . .

POINT No. 3 in the DOMESTIC ENGINEERING victory program for industry is product simplification. Plumbing and Heating Branch early accepted responsibility for leadership in this program. Simplification schedules L-42 have been issued for such products as valves and fittings, tanks, boilers and radiators, soil pipe, etc.

Generally the trend has been for the inclusion of these simplification schedules in limitation orders for specific products. Two instances of this are L-42 and L-199, dealing with water heaters and tanks.

All indications point to a continuation of simplification. This was the case in World War I, and with today's more stringent material situation, the need for, and the advantages of, simplification are even more apparent.

It is noted that simplification and standardization of products result in definite savings which can eventually be passed along to wholesalers, contractor - dealers and consumers.

Tanks and Heaters

It is more economical to manufacture a product in three sizes and styles than 30 or 300. Further, fewer styles and models can generally be made to serve nearly all applications. The benefits of simplification and standardization will be evident long after the war is over although, if experience follows present trends, sizes and models will be increased gradually when the pressure of war is no longer present.

Simplification has one other important effect and that is that it may lead to the so-called "victory" models and to concentration of manufacturing into the hands of a few producers by government edict. Victory models and concentration tend to submerge trade marks and reduce the manufacturer's responsibility for his product . . . which is not economically sound or desirable.

Trade marks and good will can, of course, be preserved by advertising; manufacturers of automobiles, for instance, are following the policy. But the production of parts for repairs is not an easy problem under concentration.

The number of water heaters now in use, for example, is vastly greater than the number of any "victory" model that would be produced, and it is just as important to keep the present heaters in operation as to provide new ones. Further, manufacturers who can no longer make new heaters, and who are concentrating on other war work, may not be willing to produce parts—especially if price ceilings prevent a profit.

In England, one policy is for a designated manufacturer to produce complete units and parts under the name of other manufacturers in the industry. These other manufacturers turn over necessary tools and dies for this purpose. The policy results in capacity production by the one manufacturer, and helps the others to keep their invested trade marks and good-will.

Concentration has thus far not been successful in this country. Nevertheless, our industry can expect the emphasis on this subject to continue and increase. For one example, the cast iron pipe division of our industry is now being discussed as a subject for concentration.

EVENTS *of 1942 and How They May Affect Your Business in* 1943

The past year marked the third successive year in which our industry registered an installed gross of better than a billion dollars. The figure of a billion and a quarter for this year is very conservative, inasmuch as it is estimated in large part upon wholesaler sales and does not include direct Government buying for large war projects, or direct contractor buying for such jobs

At left: Shot of glass piping with metal fittings. Glass piping is not yet considered economically feasible for residential service, but new developments may eventually reduce cost and breakage. Glass is extensively used in chemical applications

SUBSTITUTION *of Materials . . .*

POINT No. 4 of the Victory Program introduced to our industry in January, 1942, Domestic Engineering is substitution.

In the past year, plumbing and heating manufacturers have accomplished substitution to a degree never before considered possible. Now we have bathtubs of plastic or tile; ball cocks of iron, plastic, glass or zinc; ductwork of plasterboard and mineral insulating materials; septic tanks of wood; shower cabinets of composition; sinks of glass; convectors and heat exchanges of iron; steam traps of cast iron, etc.

Plastic tubing, having many of the desirable qualities of copper, was first introduced in the small sizes but is now available in large diameters. Glass of high tensile strength, formerly used only in certain chemical applications, is now discussed as a possible material for residential water service.

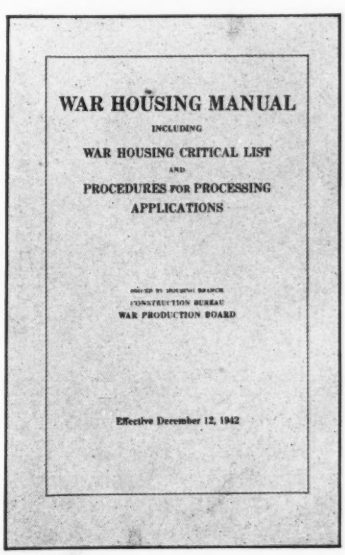
Two observations regarding substitution are of particular interest. First is the ingenuity shown by our industry in adapting these materials, adequately and with at least temporary satisfaction, to a broad range of needs. In many cases the originally specified materials on war projects, factories, etc., have run out before completion of the job and contractors have forced the job to completion with substitute materials. **Second is the point that some of these materials may remain in favorable competitive positions for the post-war era.**

Substitution and its companion trend —simplification—have resulted in tremendous decreases in the use of strategic materials in housing. For example, permanent type housing now being built uses only 2,700 pounds of critical materials for each unit, or about 20 per cent of the 9,700 pounds average required for permanent pre-war public housing. In the new temporary type family units, less than 2,000 pounds of scarce material are being used and the saving on dormitory and apartment units runs much higher.

The outlook for the coming year points to even greater use of substitutes in new and replacement work.

For the post-war era, a great field will be opened up for the replacement of substitute materials which were adapted on a frankly temporary basis. For example, home owners who have japanned iron faucets will want to replace with chrome after the war is over.

Below: New manual, including simplification and substitution specifications, just released as a guide for war housing work. This book is described in the News of Contractors section



PROTECT *the Basis for Sanitation & Production* .... WATER SYSTEMS

Water systems are rationed from the dealer to the user. Plumbing contractor-dealers will not be able to deliver as many pumps as they would otherwise be able to sell. And the same situation exists in regard to other equipment.

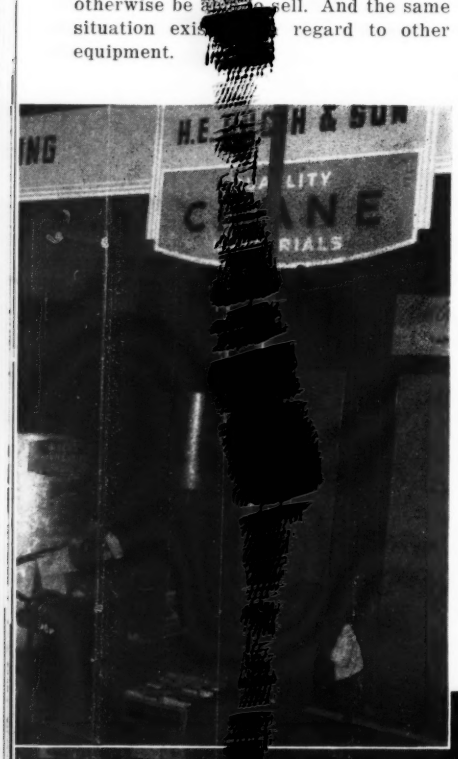
Yet, in the words of H. E. Buch, McHenry, Ill., "The basis for a contractor's success is today—as always—good products and good workmanship." Parenthetically, the contractor's service to farm and city homes is even more vital now than it was before the war, because he must keep in operation the equipment which owners have come to rely upon to help them produce food (in the case of water systems) and to protect their health and comfort (in the case of plumbing and heating).

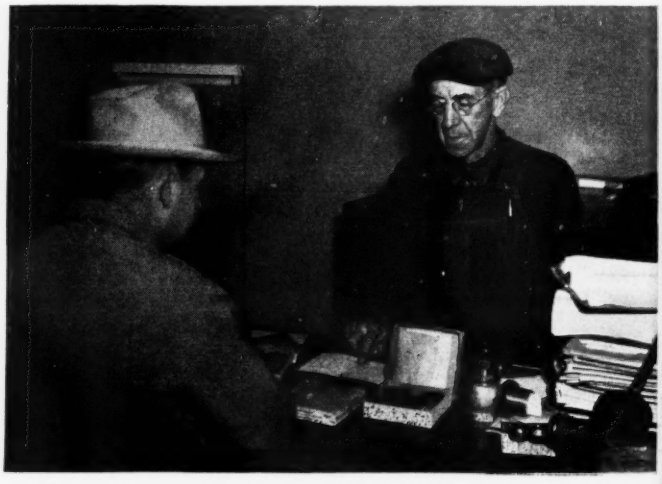
Mr. Buch isn't worrying about his business existence now, or after the war. He knows that the twin traditions of good products and superior workmanship will permit him to obtain a fair price for the repair and service work which now comprises practically his total volume.

It has worked out that way. His prices are considered "high" but his numerous customers know that the work will be right, that there won't be unnecessary call-backs and that a job handled on this basis is, in the last analysis, the most economical.

Repair and maintenance of water systems now comprises nearly half of Mr. Buch's work. He handles this end himself, and one of his two trucks is continuously in use for water system service work. In the fall, when many pumps are being drained for the winter, both the company's trucks are used on rural calls.

This year H. E. Buch & Sons Co. drained 140 systems for owners of summer homes in the area. Some of the pumps are brought into the shop and stored for the winter; then reconditioned and reinstalled in the spring. Disuse is the greatest enemy of water systems, in Mr. Buch's experience. Good systems properly installed . . . which are

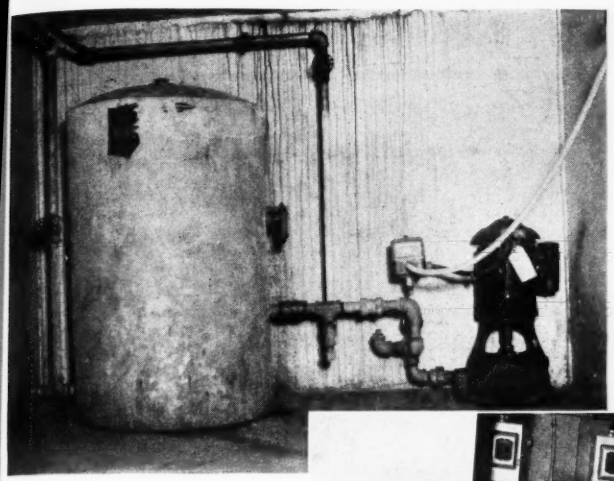


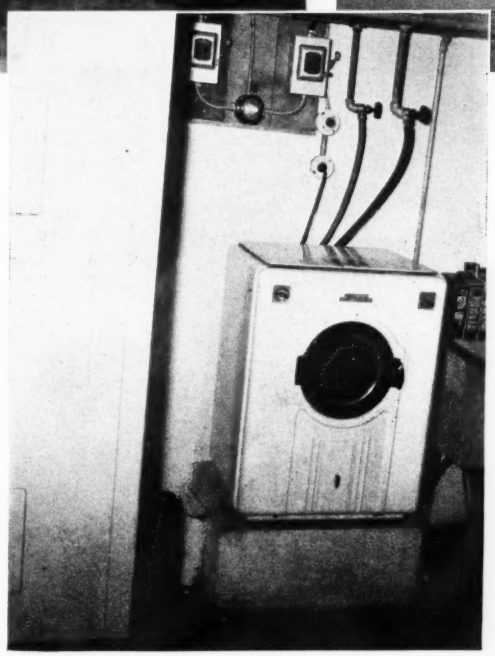


Left: Portion of show window of H. E. Buch & Son, contractor of McHenry, Ill.

Below left: Before the freeze orders, Mr. Buch had an extensive appliance business. While he is practically out of these items now, here is a section of his showroom containing ranges and refrigerators. Also sold were oil burners, stokers, fans, ironers, etc.

Below right: Mr. Buch sells a kit of pump repair parts to a customer. System encourages farmer or home owner to take care of routine maintenance, and saves the contractor's time and tires for the larger, more profitable jobs





Above and right: Photos illustrating one sale by Mr. Buch. The installation of the jet pump (above) made it possible to sell installed contracts for the following in a new home: a large capacity electric water heater; a home laundry; a bar; a modern kitchen and two complete bathrooms. Mr. Buch also handled the heating and wiring for this house—the home of Eddie Peabody, radio personality

Below: Pump display in the showroom of H. E. Buch & Son. Many contractors have been forced to reinstall showroom models for productive work

kept in continuous use for the manifold purposes of running water on the farm . . . give an amazingly small amount of trouble.

Naturally, as with any equipment having moving parts, good maintenance and quick attention to minor disorders is imperative. Farmers, Mr, Buch states, can be educated to take care of routine maintenance and small repairs themselves. This is desirable for several reasons:

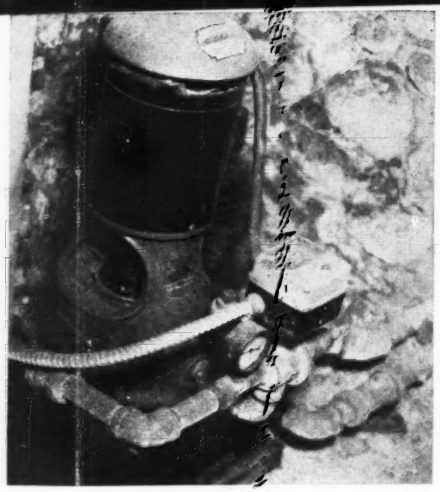
(1) The farmer's pumping costs are kept down, and consequently he remains a satisfied customer.

(2) Repairs and adjustments may require only a few minutes work but, notwithstanding, require considerable time and expense in driving to the farm.

Many charges which seem reasonable

Below right: The company operates two trucks, one of which is devoted to water systems installation and service work

Contractor, urging farmers to maintain own water systems, has vigorous service policy for handling larger repair jobs



Above: Typical shallow well water system installed by Mr. Buch

to the plumbing contractor will seem excessive to the farmer.

(3) The rural plumbing contractor recognizes that his water system work is as much an aid to food production as the farmer's labor; yet, the plumbing contractor has a manpower problem too and his time and tires should not be wasted in unnecessary trips.

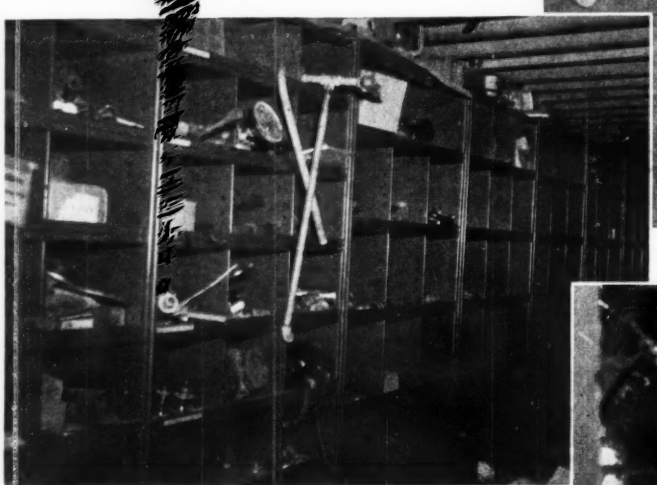
All of the above reasons add up to the advice given contractors at this time by many manufacturers of water systems: Tell the farmer how to do routine maintenance and repair work himself, and save your own time and tires for the more extensive and more profitable jobs.

In addition to a stock of suggestions and diagnoses accumulated through experience, Mr. Buch carries an extensive inventory of parts for all makes of water systems. Kits or packages of gaskets, valve springs, etc., for specified makes of systems, are kept in the showcase and merchandised as units. Miscellaneous parts for numerous makes of pumps are filed in steel cabinets with drawers labeled for easy identification of contents.

Parts for on-the-job use are packed in toolboxes and kept in each truck. There is one toolbox each for the makes most widely used in the territory and one toolbox which takes care of other makes.

The suggestion and diagnosis method works much better with farmers, Mr. Buch finds, than with summer residents (McHenry is located in a resort area). The summer people relate their water system difficulties to Mr. Buch but are not always inclined to accept his analysis of the trouble, nor to attempt repairs themselves. In these instances the contractor carefully routes his repair calls and "doubles up" to save

(Continued on Page 102)



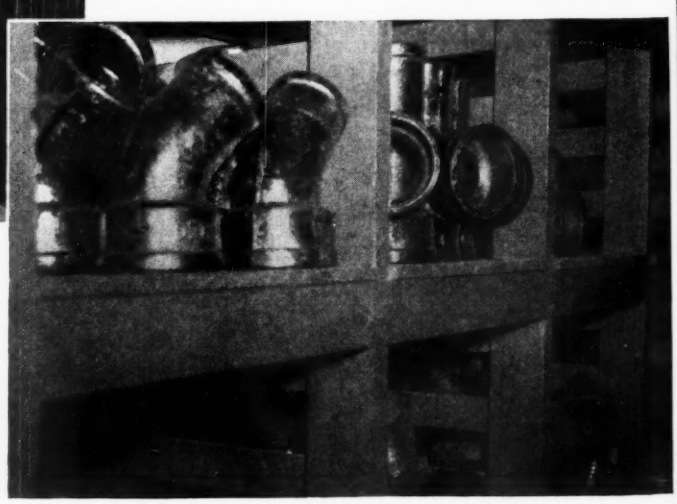
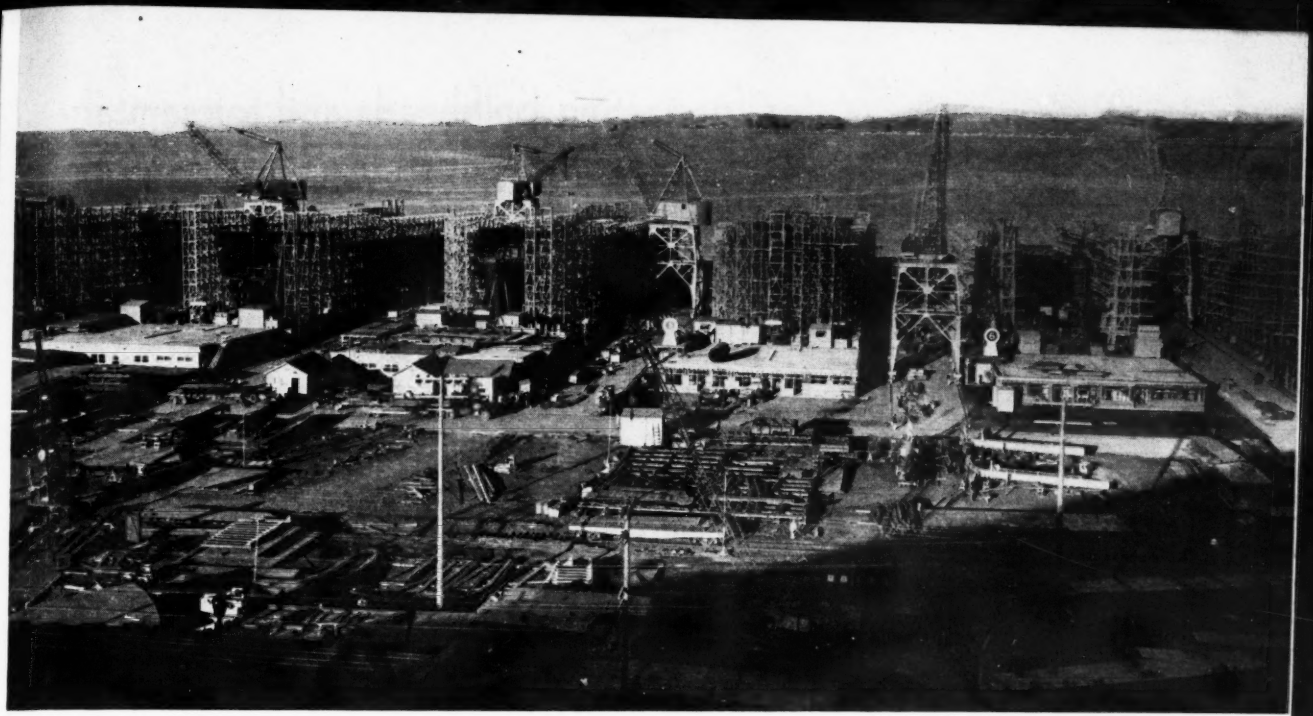


Photo above right: The company drains 140 to 150 water systems each fall for its customers. Here are a few of the pumps which have been stored in the company basement for winter servicing and spring reinstallation

Above: Storage bins for small parts in the full basement which H. E. Buch & Son uses for shop and storage

Right: Typical storage arrangement for soil fittings in the shop of the McHenry, Ill. contractor



ARTICLE AND PICTURES PASSED BY CE

Plumbing and Heating in a Modern Shipyard . .

THE master plumber is doing a real job in this war. His work in plants turning out the sinews of battle aloft, afloat and ashore has contributed to a new high in the production records of planes, warships, tanks and guns. All this and something more.

He's done a real job in the yards where they build the ships upon which the Allies depend for the delivery of American-made war supplies to the world's battlefronts.

First to feel the impact of war, the country's shipbuilding plants were the first to be expanded. And new yards were built, springing up in record time. Outstanding in this respect, and typically modern in layout, capacity and production, is the Marinship Corporation plant in California. Their first ship was launched last fall, before the yard was finished. But back of it all, there lies a story of plumbing and heating that differs from most industrial plants.

The photograph above shows the ship ways at the Marinship Corporation yards in California. Our industry's part in the building of the yard is described in the article on these pages

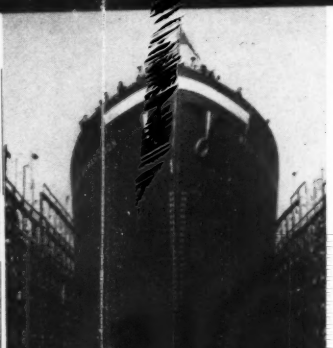
The yard was built at a cost of $15,000,000; and considering it's the country's newest plant for the building of ships, it is something of a yardstick by which to measure shipbuilding technique. There are six ship building "ways," which means six hulls can be built simultaneously.

There are many structures throughout the 100-acre yard: outstanding among them is the mold loft building, which will be described later.

The water supply is brought in through a 12 in. cast iron line which parallels the property and enters through two 6 in. meters for distribution throughout the yard, with branches and taps to every building and to shipways and outfitting docks. Between 300,000 and 400,000 gallons of water are used daily; and this includes requirements for testing bulkheads, and for ballast.

Pressure at the mains is about 100 lb during the day, with about a 100 lb pressure throughout the yard. Water pressure to each of the buildings is stepped down with pressure reducing regulators. All interior piping is galvanized iron. The main branch sewers from each building discharge into water lines with 4 in. cast iron mains. The catch basins and gutter drains, including the drainage from down-spouts, is connected to the main trunk line sewers with plain galvanized corrugated pipe. The main trunk lines discharge into the bay. All lines function by gravity flow.

Plumbing into all buildings consists of standard galvanized iron pipe for the cold water lines. The main house sewers are of caulked galvanized iron pipe, with galvanized iron pipe vents. The loop system and circuit venting system is used throughout, in conformity with U. S. government standards. Shower units, of three stalls each, are provided in the Maritime Commission offices, in the mold loft, and in a number of shops. Comfort stations are spotted throughout the yard as required.



Water for testing bulkheads and for sanitary purposes is needed to the amount of 400,000 gal. daily in this 100-acre yard. Piping to supply these needs, and heating and ventilating for the various buildings totaled a huge amount of work for contractors on the job. Work in two buildings is described in detail

The proportion at present is eight for the men for every one for the women.

Heating is provided by individual plants for each building. These plants vary from 900 square feet of hot water radiation to 16,000 square feet of steam radiation. Each plant is oil fired with automatic oil burners with pilot ignition control: smaller units are electrically ignited. Each boiler-room has its own oil storage tank—from 250 to 500 gal capacity.

There are two buildings at Marinship whose construction is of particular interest to the master plumber. One is the cafeteria, the other the mold loft building. The main dining hall of the cafeteria is supplied with hot air through steam projection heaters. These are controlled thermostatically; a motorized steam valve controls the main steam line. During the summer, cold air is supplied to the projection heaters through ducts from the outside. Over the serving counter, adjacent to the dining hall, are four outlets, 22 in. by 18 in., for exhausting the cooking odors and tobacco smoke from the dining hall and the kitchen. Fumes direct from the kitchen range are exhausted through a kitchen hood by a fan mounted on the roof.

The mold loft, for the sake of those unfamiliar with shipbuilding procedure, is more than just a big room or loft. It's a huge structure that often houses many activities other than the laying down of lines to guide the builders of ships' hulls. At Marinship it also houses a great number of yard offices and drafting and engineering quarters.

While, of course, the whole building is heated, particular attention is paid the mold loft itself—a vast room on the top floor of the 380 by 205 ft structure. Here the men have to work either crouched or lying on the floor, laying out and assembling the templates.

The heating plant is a two-pipe, vacuum return steam system operating at five pounds, gauge pressure. Each of the two oil-fired boilers has an output capacity of 7,300 sq ft of steam radiation, and is equipped to operate as a fully automatic unit. One boiler is fitted with a water heating coil delivering 240 gallons at 140 deg per hour. The burner is fully automatic, and equipped with automatic high-low fire control of mechanical type suitable for operation

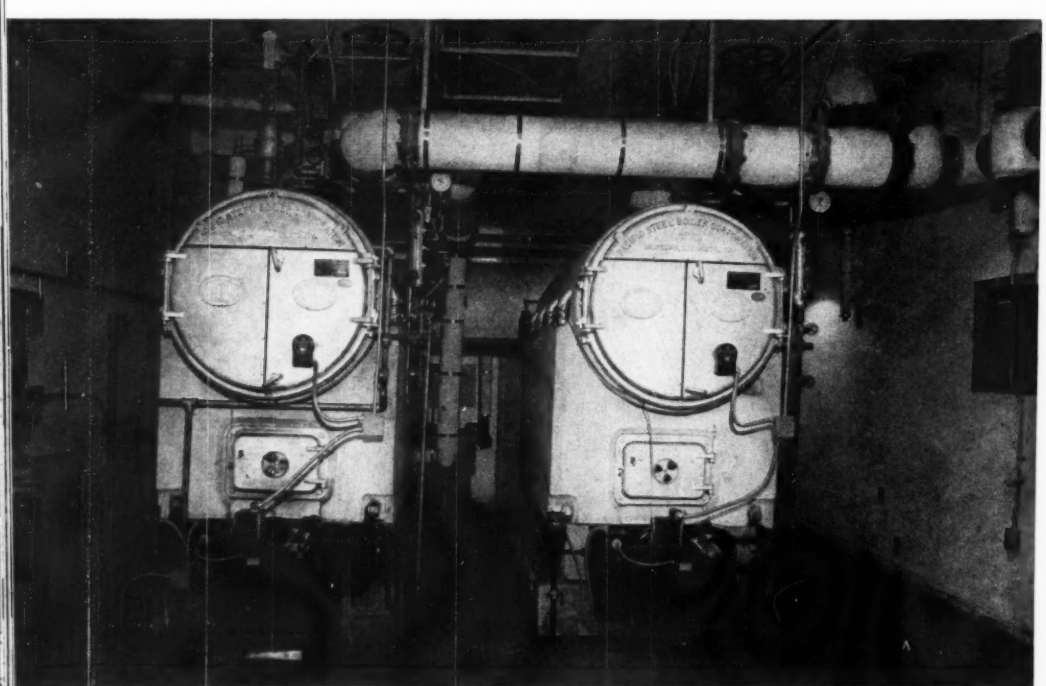


Photo at top of page shows the William A. Richardson, first ship launched at Marinship.

The two boilers which heat the huge loft building at Marinship are shown in the picture at the left. Each of these two oil-fired boilers has an output capacity of 7,000 sq ft of steam radiation and is equipped to operate as a fully automatic unit. The boilers are fully controlled and supply domestic hot water for the building

by means of a regulator. Other controls—a combustion safety and an immersion aquastat—operate through the main relay control, so wired as to maintain hot water twenty-four hours a day, and steam as required by the thermostat. The entire heating system throughout the building is controlled by an outside thermostat, to provide a temperature range of from 70 to 72 deg.

On the third floor loft projection heaters there are four thermostats and unit heater switches controlling the fan motors of the unit heaters in banks of four. The four motors are started and stopped by thermostats in response to the automatic position.

The mold loft building constituted the biggest heating job in the yard. It's a three-story structure of the dimensions already given. Something of a record was achieved in its construction—forty-two days from the foundations to the day the boilers were fired up.

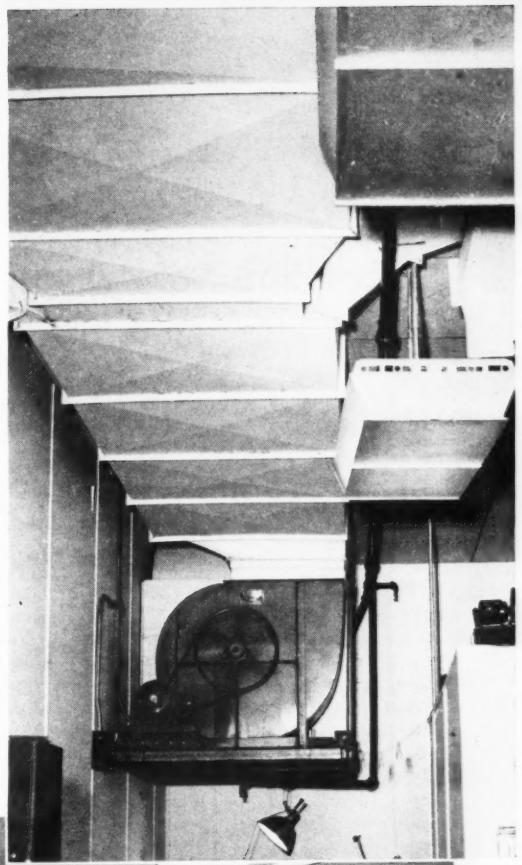
Providing comfort station facilities for women workers in wartime industry is definitely pointed up in shipbuilding activity; and as Marinship is among the largest of the country's new plants, a few figures concerning such facilities here will be given.

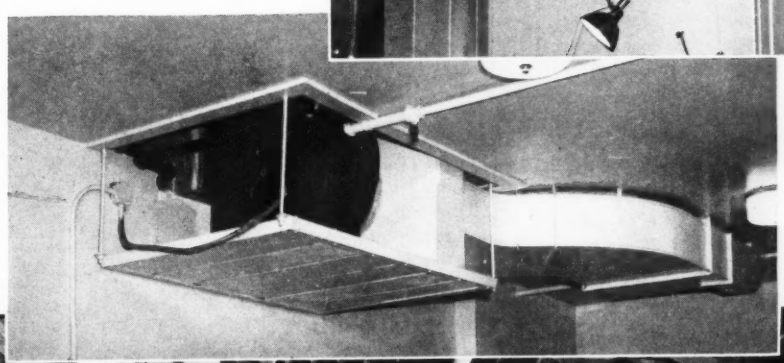
There are some 20,000 persons employed in this yard, of which nearly 5,000 are women. For these 5,000 women workers, there are 53 rooms containing an aggregate of 196 toilets (one for every twenty-five women), and 146 lavatories (one for every thirty-four), on a twenty-four-hour basis. The proportion of facilities to women workers will be stepped up when additional fixtures are installed.

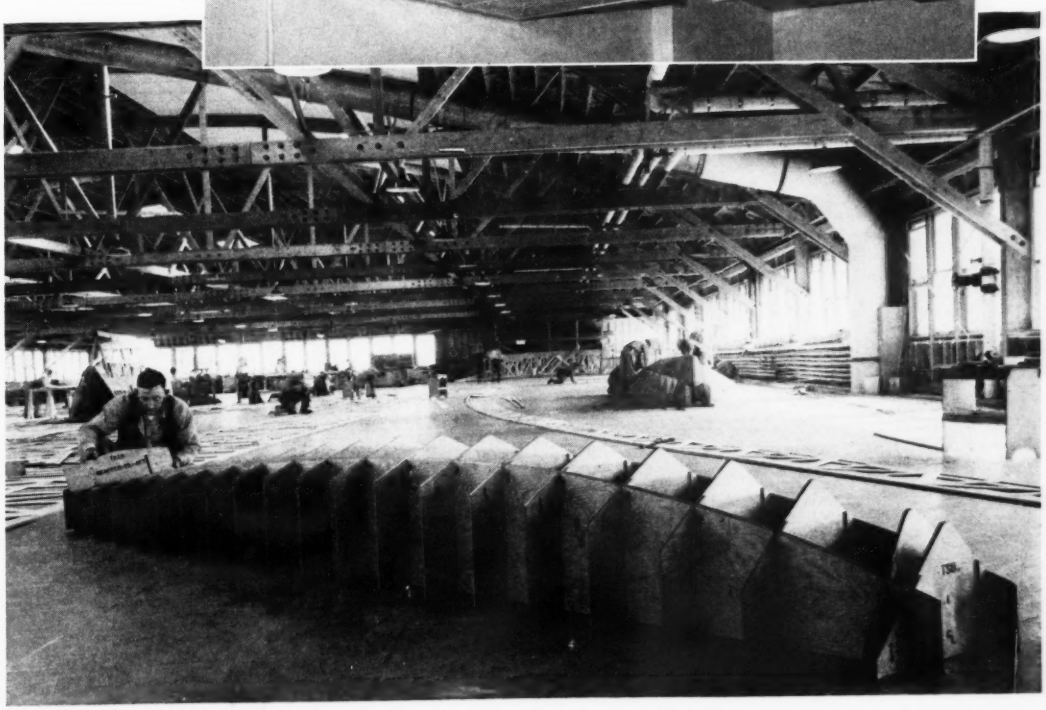
Outside of female office workers whose proportion to the total number of workers in any industry at any time is more or less constant, wartime demands at Marinship are bringing women in mounting numbers into the ranks of truck-drivers, boilermaker helpers, shipfitters, machinist helpers, burners, welders and general laborers. This follows the general trend revealed in a recent California survey.

The principal plumbing and heating contractor on the Marinship Corporation shipyard was Monihan-Stauffacher Company of San Francisco. Others were E. Sugarman of San Francisco, and Lohman Brothers of Los Angeles.

Wm. J. Archer, mechanical engineer for Marinship, designed and supervised the installation of all plumbing, heating and ventilating and utilities installation work throughout the yard.







The two photographs at the top of the page show typical ductwork installed in Marinship buildings. The picture below at the right shows the interior of one loft in the loft building. It is here that the important work of laying out templates for the ship's construction takes place. Note the ductwork in the right foreground

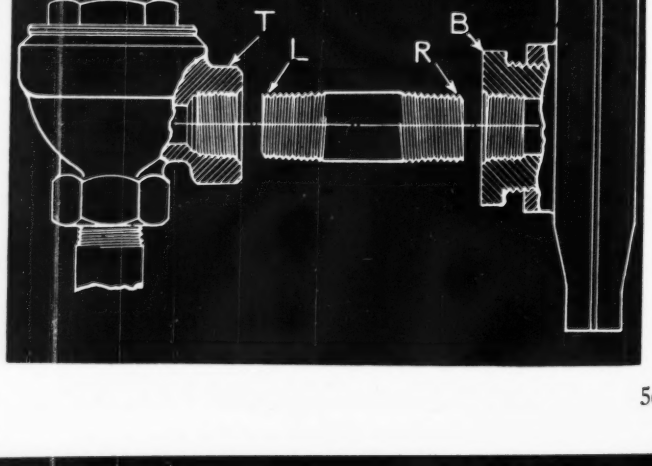
Steam Trap Installation . .

Installation of simplified steam traps, with right and left hand threaded nipples, calls for some new pointers

REPRESENTATIVE of the war-changed methods of doing things in the heating and plumbing industry is the installation of steam traps which are connected to the radiator with a right and left hand threaded nipple instead of the coupling heretofore used. The new type steam trap has a left hand thread in the female connection to the radiator, while the radiator has the usual right hand thread. The new method caused mechanics considerable difficulty which was due largely to the fact that the trap and radiator were seldom tapped to the same depth.

When the mechanic would start both left and right threads at the same time it often happened that one side would become tight before the other. If the journeyman attempted to tighten the nipple to make a leak-proof joint he would only succeed in stripping the threads on the already tightened side of the nipple. The remedy for this condition is shown in the drawing and photographs on this page.

Refer to drawing below and to photos, top to bottom: Screw the right-hand thread R of the nipple into the radiator bushing B by hand and carefully count the number of turns until it is hand tight; then remove it. Screw the left-hand thread L of the nipple into the trap T and again carefully count the number of turns until it is hand tight and remove it. Then make the connection, giving the deepest thread the difference between the number of turns for a start. For example, if the right hand thread goes into the radiator bushing 5 turns and the left hand thread goes into the trap 3 turns, then give the right hand thread a start of 2 turns in the radiator bushing



Washington

BLACK IRON AND GALVANIZED RANGE BOILERS—STANDARD AND EXTRA HEAVY

Inside diameter of tanks	Length of shell (length of sheet—not over-all length)	Nominal capacity	Tappings, pipe size	Tappings	Maximum working pressure (standard)	Maximum working pressure (extra heavy)
Inches	*Inches*	*U. S. Gals.*	*Inches*	*Number*	*Lbs./sq. in.*	*Lbs./sq. in.*
12	30	15	1	6	85	150
12	60	30	1	6	85	150
14	60	40	1	6	85	150
18	60	66	1	6	85	150
20	60	82	1	6	85	150
24	60	120	1½	6	85	150

EXPANSION TANKS

Inside diameter	Length of shell (length of sheet—not over-all length)	Nominal capacity	Finish	Type
Inches	*Inches*	*U. S. Gals.*		
12	30	15	Galvanized or painted	Vertical or horizontal.
12	60	30	Painted	Horizontal.
14	30	20	Galvanized	Vertical.
14	60	40	Painted	Horizontal.

Water Heater and Tank Simplification

Washington, D. C.—December 19—WPB today issued new orders limiting manufacture of plumbing and heating tanks (L-199) and water heaters (L-185). The L-42 simplification schedules which governed such manufacture are revoked.

In the release accompanying the new orders, WPB stated that "Gas fired and oil burning water heaters . . . will be manufactured next [this] year only for use in war housing or other war projects . . . Civilian needs for replacements of gas fired water heaters in 1943 and thereafter must come out of existing stocks. Necessary replacements may still be made for some time in the future, however, since inventories of finished equipment are comparatively large at present."

Actually—and notwithstanding WPB's statement—gas water heaters are as scarce in many areas as practically any other important plumbing and heating item. DOMESTIC ENGINEERING surveys in entire areas have disclosed only a very few gas water heaters in the hands of plumbing and heating contractors.

L-185 (water heaters) permits the manufacturer to produce coal and oil fired water heaters at 1941 levels. As to whether total production will approximate 1941, however, is another question inasmuch as some manufacturers doubtless have converted to production of direct war items.

In the production of indirect water heaters, manufacturers may use 50 per cent of the metal used in corresponding quarters of 1941. Manufacture of metal jackets and solar water heaters is out. Manufacture of repair and replacement parts is permitted at reasonable levels.

Use of copper is prohibited, except for pressure, temperature, vacuum and electrical controls or safety devices and valves.

Both L-185 and L-199 require that repairs to both water heaters and tanks may not use more than one pound of copper and copper base alloy in excess of the copper and copper base alloy being replaced. The old metal is supposed to be sold for junk.

L-199, while mainly concerning the manufacturer, also includes some installation prohibitions: No person may install metal tank supports (except in vessels, etc.). No person may install any copper, copper base alloy, nonferrous metal, stainless steel, or monel metal tank (except in aircraft or vessels).

L-199 lumps together in one classification metal expansion tanks, domestic hot water storage tanks, range boilers, tanks for hot water generators, etc. Prohibiting use of copper or copper base alloy except for important war purposes, the order includes specifications for tanks to be made of black iron or galvanized. At the left are the tables of specifications for range boilers and expansion tanks.

M-21-b

Washington, D. C., December 31—A system of temporary supplementary quotas, designed to enable iron and steel warehouses to rebuild their stocks, was announced today.

(Continued on Page 81)

P-84 and L-79 Amended

Washington, D. C., December 16—Preference Rating Order P-84 was amended today to bring that order into conformity with the OPA rationing program. The particular paragraph which accomplishes the purpose is Paragraph (ii) which states: "No installer or supplier may apply the rating hereby assigned to obtain any material the transfer of which is subject to a ration order of the Office of Price Administration."

An addition to the list of definitions is included to more clearly define certain classes of equipment. This addition points out that plumbing equipment means ". . . also any device using coal, oil or gas as fuel for cooking, baking, or heating food, or for heating dishes or cooking utensils, except machinery the manufacture or distribution of which is restricted by General Limitation Order L-83 as amended from time to time."

Washington, D. C., December 16—L-79 (the plumbing and heating freeze order) was amended today to make it conform to OPA ration orders and the fuels situation.

Gas-fired boilers, furnaces and radiators are added to the items which cannot be sold without priority rating. The provision that oil burning boilers and furnaces may be sold to replace other oil burning heating equipment—for the purpose of reducing fuel oil consumption—is revoked.

The amended order continues the paragraph that materials for conversion of oil burning equipment to other fuels may be sold without priority rating.

Also revoked is the provision that cooking stoves, heating stoves and water heaters may be sold and delivered upon certification that the home owner has no such equipment in his home.

Questions and Answers on CMP

Steps manufacturers are to take to qualify under Controlled Materials Plan are explained here

FOLLOWING is an outline of the steps which manufacturers of plumbing and heating products (Class B products) will take to obtain materials through the Controlled Materials Plan.

Information on the cooperation expected of wholesalers and contractors was not available as this issue went to press.

1. Application blanks or other instructions with respect to obtaining allotments of controlled materials will be issued by WPB this month. You will be requested to make application for controlled materials required by you and your secondary consumers for delivery during the second quarter of 1943 to meet production schedules approved by the appropriate industry division (generally, the Plumbing and Heating Division).

2. A manufacturer of a Class B product (plumbing and heating items are so classified) is always a prime consumer. He will make his application to and receive his allotment from the appropriate WPB industry division, which, in this respect, acts as an "office" of the appropriate claimant agency or agencies. In special cases only, a claimant agency may make an allotment directly to a Class B producer.

3. The producer will issue necessary application blanks to his secondary consumers requesting them to apply for controlled materials needed to meet production schedules approved by him covering the second quarter of 1943.

4. After receiving applications from his secondary consumers, the producer will submit his application to the appropriate industry division.

5. The industry divisions will then review the applications and will issue allotments, preference ratings, and authorized schedules. This should start early in February.

6. Upon receipt of his allotment, the Class B producer will place his purchase orders (or modify existing orders by schedule releases) so as to conform with the allotment, preference rating, and authorized schedule which he has received. He will use the allotment for purchase of controlled materials and for making further allotments to producers of Class "A" products to be incorporated in his product, at the same time authorizing production schedules for such producers. The preference rating and allotment number will also be used for the purchase of Class "B" products and materials other than controlled materials to be incorporated in his product. Detailed provisions with respect to the use of preference ratings under CMP will be included in regulations to be published.

7. Applications from the B producer are to include only the materials required for his Class B products and for incorporated Class A products, and are not to include materials required for other Class B products incorporated in his product.

8. The method, forms, application blanks and procedures for obtaining maintenance, repair and operating supplies, as well as requirements for construction and facilities, are not yet finally decided upon. You will be notified in advance as to where and when to make application for these requirements. In the meantime, follow existing preference rating procedures.

9. If you have not been instructed by February 1, 1943, to file an application, you should ask for advice from the appropriate industry division of the WPB or from your nearest WPB local office. Instructions for filing applications will be made either by specific letter to individual producers or by general orders or regulations referring to specified classes of producers.

Question 1. CMP provides for the submission of requirements by the claimant agencies on January 1, 1943, and the determination of programs by the requirements committee by February 1, 1943. **What should my company be doing to insure that its requirements are given proper consideration in this determination?**

This question has been raised repeatedly in various forms with respect to bills of materials; production requirements; maintenance, repairs and operating supplies; and expansion of construction and facilities.

Answer: The short answer to this question is that you should do nothing until you are properly advised by the claimant agency, either directly if you are a prime consumer or indirectly through your prime consumer if you are a secondary consumer; by the appropriate WPB industry division for production requirements if you are a manufacturer of a Class B product or for industrial maintenance, repairs and operating supplies, no matter what you produce so long as your plant is not owned and operated by a claimant agency; or by general instructions and regulations now in process of formulation and to be issued by the WPB. The essential point is that the November 2 booklet on the Controlled Materials Plan now in your hands is neither an administrative order nor a set of instructions. It has been circulated to inform you generally of the character of the change in materials distribution about to be initiated. It will be supplanted by general and specific instructions in ample time for each of you to comply with its essential provisions.

The plan provides that by July 1, 1943, all companies requiring controlled materials (that is, steel, aluminum, or copper) will be operating under the plan. Prior to July 1 many companies will of necessity continue to receive their authorizations to purchase materials under PRP.

You will continue to operate under PRP and other established priority regulations (subject to modifications which will be made when necessary) until it becomes practical to transfer your operations to CMP. Prior to that time, you will receive instructions as to what is required of you.

Question 2. In view of the fact that complete operation under CMP will not begin until July 1, 1943, may my com-

(Continued on Page 99)

Problems and Promises . . . of POST WAR BLDG.

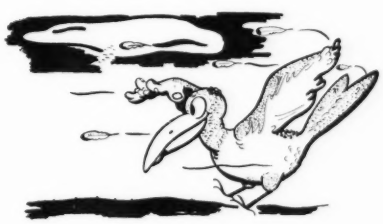
The new opportunities which await our industry in the post-war world will be accompanied by new problems. Greater demand for better homes is seen if prices can compete with old home market

THE construction industry is in a particularly strategic position in the post-war period. Just as it was one of the dominant elements in the high level of prosperity in the twenties; just as a lack of large building volume was the chief reason for failure to accomplish a full recovery in the thirties, so construction is the key to prosperity in the post-war era. These beliefs were expressed recently by S. Morris Livingston, U. S. Department of Commerce, when he spoke before the Chicago Building Conference.

"Our people have been given a dramatic lesson in the production capacity of this country if the demand exists," asserted Mr. Livingston. "They will insist on a solution of the problem of distributing this large output in peacetime. They will hold that widespread unemployment is the greatest economic waste and must be eliminated at all costs. We need to start now to do intelligent long-range planning toward the goal of maintaining a high level of productive employment after the war."

Mr. Livingston called upon individual business enterprise to study the post-war possibilities and to be prepared to take full advantage of them in terms of maximum employment of our available manpower and the production of more goods for more people at less cost.

"The time to start is now," he pointed out. "You have all heard of the 'whiffle bird' who flies backwards because he doesn't care where he is going but wants to know where he has been. We don't want to be whiffle birds. We don't like where we have been the past ten years. The future offers fascinating possibilities in the way of a higher standard of living for people in all walks of life. The time to start planning for that future is now."



Whiffle Bird: who flies backwards because he doesn't care where he is going but wants to knew where he has been

The problem, as stated by Mr. Livingston, is to find a market for almost 50 per cent more goods and services than we produced in 1940. He then showed that the experiences of the last dozen years give us a working basis for anticipating these markets. War savings, increased national income and a highly accentuated demand for consumer durable goods will combine to make a huge market.

The participation of the building industry in this market depends, Mr. Livingston said, on the ability of this industry to offer the consumer more for his housing dollar than the second-hand dwelling can offer him. This should not be too difficult, he explained, inasmuch as the possibilities for designing a better house at no greater cost encourage the hope that this competitive position relative to the pre-war house will be greatly improved.

Even though all the increased demand for dwelling units cannot be translated into demand for new construction the housing market created by maximum employment would require an enormous volume of new construction. At the height of the construction boom of the twenties we produced almost one million homes in one year. "With this backlog, plus the roughly half-million additional families coming along each year, you can do your own guessing as to how much our potential construction boom might exceed that of the twenties both in amplitude and duration."

Great acceleration in the cleaning out of blighted areas was predicted by Mr. Livingston as was an increased demand for higher priced housing. "War is in many ways a period of rapid change. It forces and encourages the development of new materials, new construction methods, better designs, mass production techniques, simplification and standardization. It helps to break down habits, customs and laws which have been barriers to the progress of the construction industry and the efficient, effective, economical distribution of its product. Everyone connected with the industry should take full advantage of this break with the past in order to exploit the low price market as well as to hasten the process of obsolescence in the higher price field."

THE HEAT'S OFF

. . . But It's Warm!

THE consumer's objective, in his part of the fuel oil rationing program, is to make his allotment carry him through the winter with the greatest amount of comfort for himself and his family. It has been proved to many in various parts of the country that this objective cannot be attained merely by cutting the temperature from 70 to 65 degrees. Moreover, while 65 degrees can be endured during the day when people are more or less active, it is not a comfortable temperature in the evening. This is particularly true in colder weather when the inside humidity may drop to 20 per cent which would drop the *effective temperature* to around 60 degrees.

One of the first possibilities occurring to the occupant is that he may be able to turn off the radiators in rooms which can be placed out of service for the winter. On the other hand, there are many people who have no such extra rooms. In such cases, the scheme of permanently closing off and discontinuing the use of a room is out of the question. There are, however, thousands of houses in which the living rooms are arranged on the first floor and the bedrooms and bath on the second. There also are many bungalows or one-story houses where the bedrooms and bath are segregated from the other rooms so that they may be treated separately from a heating standpoint. For such conditions it is believed that the following discussion will clarify the situation to a great extent.

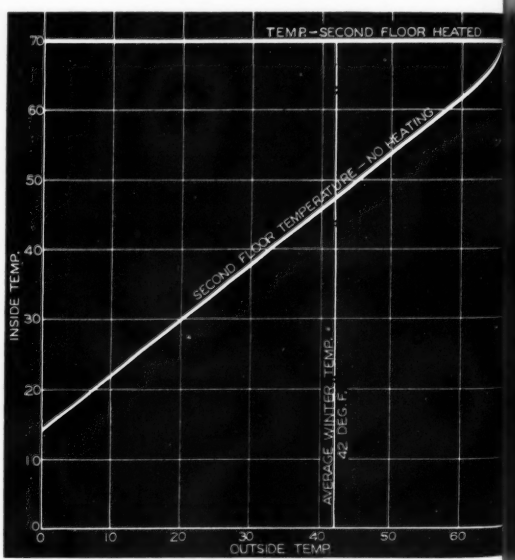
First, let us consider the bedrooms which we know will be occupied in most cases only at night. Is there any possibility of making a substantial saving in heating these rooms? Suppose, for example, that the bedroom radiators were turned off on the second floor (leaving the bathroom radiator on to safeguard the plumbing as well as to promote reasonable comfort). Would it be possible to use these rooms for sleeping without the danger of pneumonia or even colds? The answer is yes, and it can be done in the following manner.

For the purpose of having something concrete to talk about it will be assumed that we have a house approximately 20 ft wide by 33 ft long, of two stories, with 140 sq ft of radiation on the first floor and 180 sq ft of radiation on the second floor. The bathroom has 10 sq ft of radiation, leaving 170 sq ft for the bedrooms, second floor hall, and so on. The first question is this: assuming that the balance of the house is kept at the customary 70 degrees, what temperatures will result in the bedrooms when the radiators are cut off when outside temperatures are between zero and 70 degrees? It is assumed that the radiation in the house is sufficient to maintain 70 degrees inside with zero outside. If the bedroom radiators have been sized to maintain only 65 degrees, as sometimes is done, this will make no difference in the result since these radiators are *shut off*.

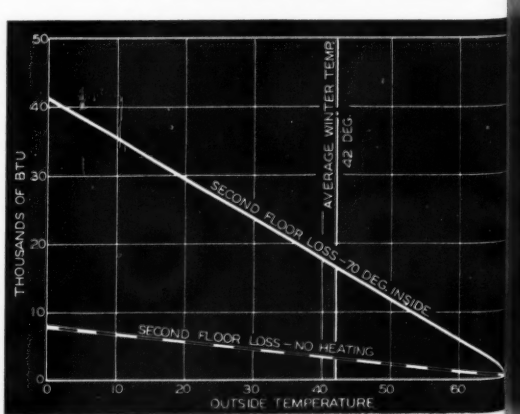
The second floor bedrooms will then assume such a temperature that the heat admitted through the floor (or the first floor ceiling) will equal that dissipated from the bedrooms to the outside. This temperature may be determined for zero outside by the following calculation:

Since there are 180 sq ft of radiation

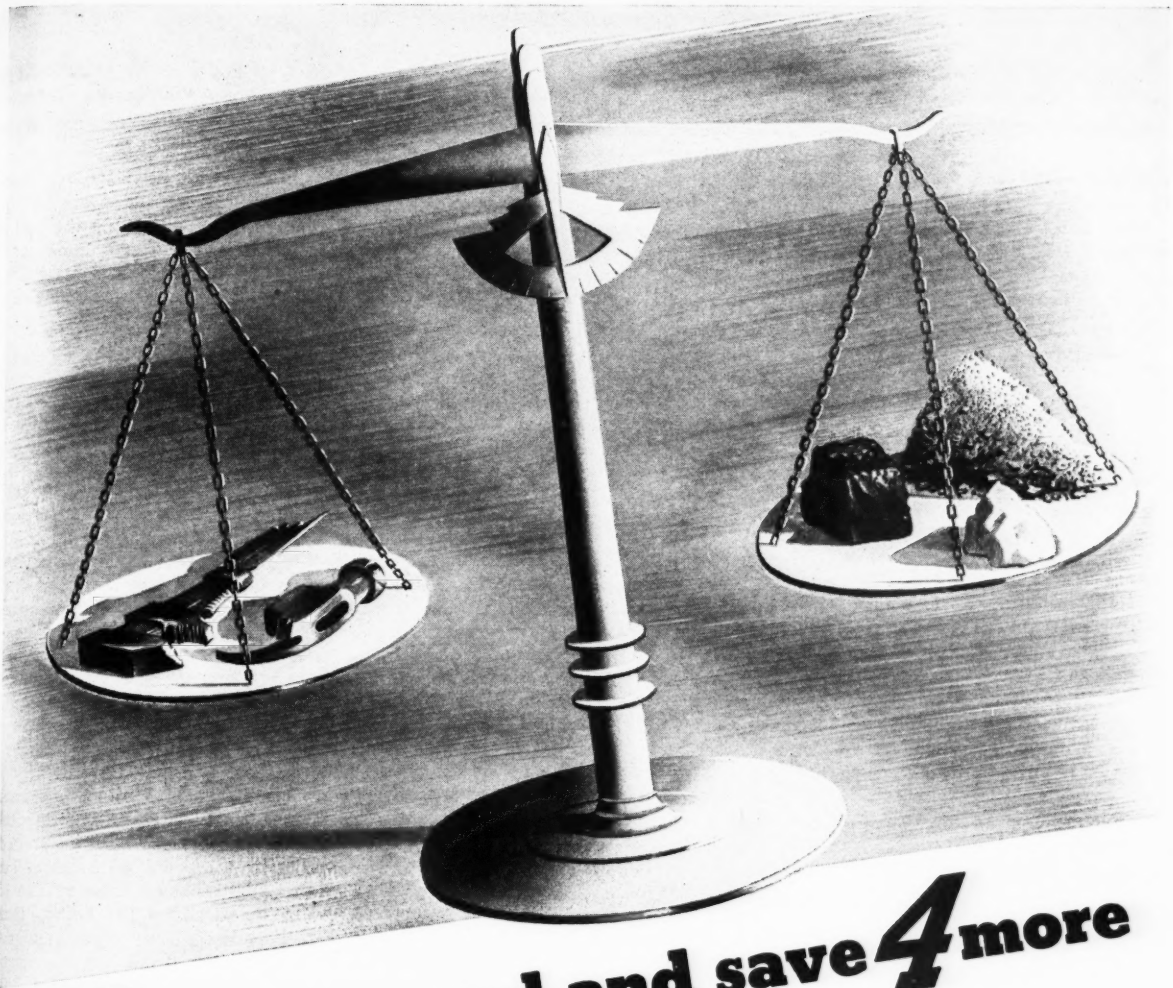
(Continued on Page 103)



The top chart at the right, Fig. 2, shows the temperatures obtained inside the house under two conditions of heating and at various outside temperatures. The bottom chart, Fig. 1, shows Btu losses from the house at various indoor and outdoor temperatures. See text for complete explanation of charts



Shutting off the radiators on the second floor or in isolated bedrooms, while the rest of the house is kept at comfortable temperatures may answer the fuel problem for some



Scrap a pound and save 4 more

EACH pound of scrap used in making war steel replaces a pound of pig iron.

To make one pound of iron requires nearly four pounds of ore, coal and limestone.

So when you turn in a pound of scrap you also conserve four pounds of vital raw materials. Translate this saving into terms of the 6,000,000 tons of steel scrap that the industry needs today. It is the equivalent of:

12,000,000 tons, or 240,000 carloads of iron ore,

7,200,000 tons, or 144,000 carloads of coal,

3,000,000 tons, or 60,000 carloads of limestone.

Think also of saving the millions of man hours of labor involved in mining, transporting and processing these 444,000 carloads of raw materials — enough to form a solid train stretching from Boston to San Francisco.

The more dormant scrap YOU salvage, the greater the amount of America's materials, machines and manpower is released for the all-important task of winning the war now.

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Questions From Readers

Steam Losses

To the Editor:

From a table which I recently saw published I find that at 100 lb gauge pressure the following losses will occur through various sized openings:

Size of Opening	Number of pounds steam wasted per 30 day month
1/2	812,772
3/8	457,182
1/4	203,193
1/8	50,798
1/16	12,699
1/32	3,175

I would appreciate it if you would tell me how to calculate these losses at 5 lb gauge.

Another problem which I have is to determine how much steam is necessary to produce 1 gal of condensate if the steam is at 5 lb pressure.

New York D. M. O.

To the Reader:

We assume that the table which you have quoted for the amount of steam at 100 lb. gauge which will escape in a 30 day period from different sizes of openings is based on the flow of steam through orifices in which case it would be modified as follows for steam at 5 lb. gauge pressure.

Size of Opening	No. of pounds Wasted per 30 day Month
1/2 in.	97,779
3/8 in.	54,763
1/4 in.	25,390
1/8 in.	5,974
1/16 in.	1,385
1/32 in.	352

These amounts are obtained by determining the velocity of flow through an orifice with 5 lb gauge pressure (or 19.7 lb absolute pressure) into atmospheric pressure at 0 lb gauge or 14.7 lb absolute. Under these conditions the velocity will approximate 810 feet per second. The area of the orifice times the velocity will give the theoretical cubic feet passed per second and this multiplied by the orifice efficiency will give the actual number of cubic feet delivered per second. This amount, in turn, multiplied by 60 seconds per minute by 60 minutes in one hour, by 24 hours per day and by 30 days per month will give the number of cubic feet per month. As there are 20.4 cubic feet of steam to every pound of steam at 5 lb gauge the result must be divided by 40.4 to change it into pounds of steam. The formula is $\frac{A \text{ in sq. in.}}{144} \times 70 \text{ per cent} \times 810$ fps x 60 sec x 60 min x 24 hr x 30 da./20.4 equals the number of pounds of steam delivered when "A" is the area of the opening. Calculating this for each size of opening gives the approximate results listed above.

Replying to your second question one gallon of condensate represents 8⅓ pounds of steam at any pressure and the number of cubic feet it represents at 5 lb gauge pressure would be 20.5 times as much or 171 cu ft of steam.

• • •

Sewage Discharge

To the Editor:

What is the maximum number of gallons per minute of sewage that can be delivered through a 10 in. cast iron force main when pumped by two centrifugal pumps. The pumps are rated at 400 gpm each and are driven by 5 hp motors.

Rhode Island B. R. G.

To the Reader:

The amount of sewage which may be delivered through a 10 in. force main largely depends on: a. the length of the main; b. the number and type of the fittings; c. the head that the pump must operate against.

The amount of head which a pump, delivering 400 gpm and operated by a 5 hp motor, would pump against may be approximated by assuming 70 per cent efficiency of the pump so that with direct connection the 5 hp applied to the pump shaft would reappear in the water pumped as 5 hp x 70 per cent or 3.5 hp.

Since the pump is delivering 400 gpm each 100 gpm will receive one-fourth of this horsepower or 3.5 hp x ¼ or 0.875 hp.

This 0.875 hp when handling 100 gpm will deliver this water against a head of about 40 ft. Four times as much horsepower will deliver four times as much water or 400 gpm against the same amount of head. This is what each of your pumps will do. The two together will deliver 800 gpm against 40 ft of head.

The friction of water passing through a 10 in. line at the rate of 800 gpm is about 2 ft per 100 ft of equivalent length of run. Therefore, the pumps will supply a line with an equivalent length of run of approximately 40 ft / 2 ft. x 100 ft. or 2,000 ft. elr could be handled. Equivalent length of run, of course, is that length of straight pipe of the same size which would have the same friction loss as the actual length of pipe plus the losses in the fittings, valves, etc. If your line has less than 2,000 ft elr then the added amount of water would be dependent on the pump characteristics for greater volumes and lesser heads; as this characteristic curve was not available we are unable to say just what the results would be under various conditions.

• • •

Sprinkler Water Htg.

To the Editor:

A customer of ours has a 75,000 gal outside metal water storage tank (unprotected) which supplies an automatic sprinkler system; it is desirable to keep the water in this tank at a temperature of 40 deg when an outside temperature of 0 deg prevails. The water in the tank is, at present, heated by a low pressure vacuum steam heating system with thermostatic traps used to heat the factory and offices. A steam pressure of 5 lb is carried.

The heating system in the tank consists of a 2-in. spiral standard coil containing 120 lineal feet which is connected to the heating system. The owners report that this method of heating has been very satisfactory except that it places an overload on the boiler, thus necessitating hard firing to produce sufficient steam for total requirements. They want to put in a separate low pressure heating boiler of sufficient size to handle the tank in connection with a separate electrically operated vacuum pump and receiver to maintain a vacuum on the coil in the tank and to return the condensation to the boiler. They say they have tried to circulate steam through the coil in the tank based on a steam pressure of 5 lb but were unable to do so without connecting it up to the vacuum system.

The writer has checked over this proposition, as have several other engineers, and there seems to be considerable variance in opinion. I would appreciate it if you would tell us the size of low pressure boiler which you would recommend for this service. Also, do you think the present coil is sufficiently large for accomplishing the purpose?

Ohio J. A. O.

To the Reader:

Since the heat lost from the tank is a function of the amount of surface exposed to the zero temperature with due allowance for wind action and other variables, it follows that we cannot answer your question with any ac-

(Continued on Page 65)

WOMEN IN INDUSTRY NEED CLEAN MODERN WASHROOMS

WOMEN workers in increasing numbers stand at machines and work-benches today, adding new power and authority to America's fighting strength.

To help their morale, to guard their health, to conserve their time —only the best possible plumbing facilities are good enough!

Kohler offers special "WIN-THE-WAR" plumbing, to help you make these and other wartime installations. In the new line, scarce metals are replaced by vitreous china and cast iron and plastics, wherever possible. A minimum of brass is used in valve seats and stems to assure efficient service.

Kohler "WIN-THE-WAR" plumbing is available for your use both in industry and housing — in war plants, at Army and Navy bases, in essential construction such as war-worker homes and for necessary renewals. These jobs command high priorities and are worth going after.... Kohler Co. *Founded 1873.* Kohler, Wisconsin.

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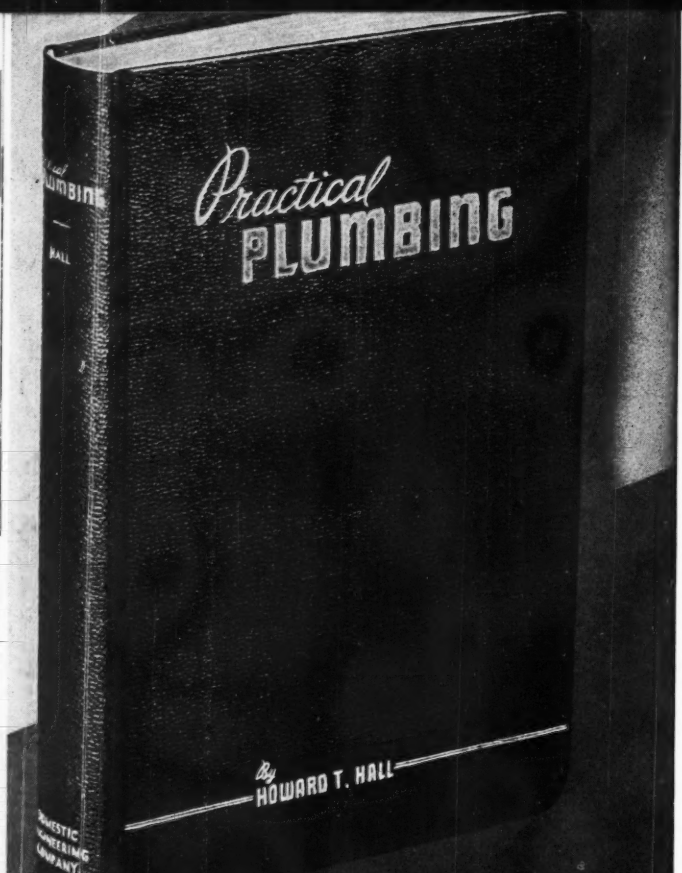
PLANNED PLUMBING AND HEATING . . . ELECTRIC PLANTS

(Above) *New* "WIN-THE-WAR" STACY *vitreous china lavatories have special Centra mixer fittings of cast iron smoothly coated with baked black plastic, inside and outside. The working parts are brass.*

DAYBROOK *vitreous china drinking fountain with non-squirting bubbler head; automatic volume control; self-closing and adjustable flow.*



TO THE Point

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Practical COVERS EVER PHASE OF PLUMBI

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Questions From Readers

Sprinkler Water Htg.

(Continued from Page 62)

curacy without knowing the dimensions of the tank. However, we can approximate the results by assuming a tank which has the necessary capacity and a slight variation in dimensions should not affect the result very materially.

A 75,000 gal tank must contain

75,000 gal / 7.5 gal per cu ft or 10,000 cu ft.

If we assume a diameter of 20 ft the area of the tank will be

20 ft × 20 ft × 0.7854 or 314 sq ft approximately.

In order to contain 10,000 cu ft the height of the tank must be

10,000 cu ft / 314 sq ft or 32 ft, again approximately.

Adding 1 ft for the tank projection above the water line gives the actual height of the tank as 33 ft.

The outside surface on the tank then will approximate the following:

Bottom.....314 sq ft
Top.....314 sq ft
Adding 25% 78 sq ft (to allow for cone shape)

Total Top..392 sq ft
Side.....Circumference 20 ft × 3.14 or 63 ft in round numbers
Height of side.....33 ft
Area of side.....2,079 sq ft

Summary

Bottom	314
Top	392
Side	2,079
Total area	2,785 sq ft

The following formula for storage tanks of steel can then be used.

A × (tt - ot) × 1.5 equals loss per hr in Btu

when 1.5 is the co-efficient for a steel tank

A is the exposed area of the tank
tt is the tank temperature desired
ot is the minimum outside temperature

Applying to this formula the quantities previously obtained gives

2,785 × (40 deg - 0 deg) × 1.5

or

167,100 Btu per hr.

This is equivalent to 700 sq ft edr of steam radiation. Allowing 25 per cent for transmission losses in piping to and from the tank would make the boiler load

175 sq ft (25 per cent)
700 sq ft

875 sq ft boiler rating

Let us now compare this with the capacity of the coil installed. The coil is made up of 2 in. pipe which has ⅝ sq ft surface per lin. ft. The coil is 120 ft long, so the external surface on the coil is

120 lin. ft × ⅝ sq ft or 75 sq ft.

The transmission between a coil at 5 lb steam pressure, or 227 degrees, and water at 40 degrees is 50,000 Btu per sq ft for iron pipe and about 80,000 Btu for brass pipe. The heat transmitted per hour by the coil immersed in 40 degree water will approximate

50,000 Btu × 75 sq ft or 3,750,000 Btu for iron

or

80,000 Btu × 75 sq ft or 6,000,000 Btu for brass

The figures approximate 14,000 sq ft edr for iron and 24,000 sq ft for brass and are manifestly way out of proportion to any conceivable heat loss that would occur. Personally we are of the opinion that the boiler need not exceed 900 to 1,000 sq ft rating but this would only keep a small portion of the coil hot as the steam would condense more rapidly than the boiler could produce it.

● ● ●

December's Answer

The Question:

One of the many hot rooms in a bath house is to be kept at 100 degrees temperature using steam radiators for this purpose; calculations for the room show that for ordinary conditions of 70 degrees in the room and zero outside, the required amount of radiation is 150 sq. ft. of steam radiation. How much steam radiation must be installed to hold this room at 100 degrees?

The Answer:

1. The heat loss of this room is increased in direct proportion to the

(Continued on Page 80)

● ● ●

Fuel Requirements

To the Editor:

We would like very much to obtain some charts, tables or rules for estimating the amount of fuel oil required for heating systems in this vicinity.

Illinois H. T. W.

To the Reader:

Printed herewith is a table which shows the amount of fuel oil required for heating homes of various Btu losses—from 40,000 to 100,000—for each of the four zones. You will note that the table can be used to estimate either 60 or 70 per cent efficiency of the heating system. We might point out that these figures apply only to a home with average losses; a house which is extremely well insulated or one very poorly insulated and with bad construction would necessarily show variations.

House—Btu Loss	Temperatures Maintained	Zone A Gals. Used	Zone B Gals. Used	Zone C Gals. Used	Zone D Gals. Used
40,000	70 Deg	1036	912	857	533
	65 Deg	891	748	686	321
50,000	70 Deg	1295	1140	1071	666
	65 Deg	1114	935	864	413
60,000	70 Deg	1554	1368	1285	800
	65 Deg	1337	1122	1028	496
70,000	70 Deg	1813	1597	1499	933
	65 Deg	1559	1310	1199	578
80,000	70 Deg	2042	1824	1714	1066
	65 Deg	1756	1496	1371	661
90,000	70 Deg	2331	2053	1928	1200
	65 Deg	2005	1683	1542	744
100,000	70 Deg	2590	2281	2142	1333
	65 Deg	2227	1870	1714	826

This table shows the anticipated fuel oil requirements in homes of from 40,000 Btu loss to 100,000 Btu loss for the four major heating zones. The table may be used for 50, 60 or 70 per cent efficiencies of the heating plant

To arrive at fuel consumption when operating efficiency is at 70 per cent (the above figures are for a 60 per cent efficiency) multiply the above figures by 0.86. To obtain operating efficiencies of 50 per cent multiply each of the above figures by 1.2.

ASHVE Schedules War Topics for Meeting

ACCORDING to advance report, this year's annual meeting of the American Society of Heating and Ventilating Engineers will be attuned to such important contemporary topics as fuel conservation, food dehydration, manpower problems, warship ventilation.

The meeting will be held January 25 to 27 in the Hotel Gibson, Cincinnati.

A special panel discussion is scheduled on the subject, "How to Keep Fit in Cold Homes." This will be led by Dr. C.-E. A. Winslow. At another session, Professors Kratz and Fahnestock and Mr. Harris of the University of Illinois will present the paper "Residence Heating Operation with Reduced Night Temperatures." This paper will go far to settle the controversy as to whether reduced night temperatures actually save fuel. The conclusion is "Yes" and actual performance figures will be given.

Four technical sessions will be held, commencing on Monday morning, January 25, and there will be several research papers covering resistance of various building materials to vapor transmission and performance of air duct outlets.

The members of the Cincinnati chapter will be hosts for the occasion and the committee on arrangements has announced three outstanding social functions: first, a joint meeting with members of the Cincinnati Engineers' Club at noon on Monday; a get-together dinner and ice show on Monday evening, and the annual banquet on Tuesday evening.

The members of the committee on arrangements are: W. C. Green, honorary chairman; Albert Buenger, general chairman; A. L. Hard, vice-chairman; G. V. Sutfin, secretary; W. H. Junker, finance; K. A. Wright, publicity; Mrs. G. B. Houliston, ladies; I. B. Helburn, banquet; G. B. Houliston, entertainment; H. E. Sproull, reception; W. W. Edwards, transportation; and M. E. Mathewson, inspection trips.

Conservation Topics . . .

Dean Interview

(Continued from Page 43)

Petroleum Administrator for War, told of a sample survey recently made by PAW in District 1, in which it was found that 35 per cent of those who thought they could not convert and so reported, really had convertible plants.

Delay of many industrial plants in converting at the present time is due to lack of facilities for storing coal, declared T. J. Thomas, of the Office of Coordinator of Solid Fuels. Although the coal situation is not good, Mr. Thomas said, it can be alleviated next winter if large users stockpile their coal this summer. By next summer, Mr. Thomas told the group, the storage situation may be such that industrial users may have to stockpile their coal as far as three miles from their plants.

Establishment of the new Conversion Clearing Houses to aid the conversion program was reported by T. J. Reynolds, chief of the program planning section of the Fuel Oil Division.

Purpose of these new regional agencies is to coordinate the efforts of all Government agencies concerned with the fuel oil program to facilitate procurement of materials for conversion.

The clearing houses have been set up and are in operation in New England and in New York. A third office is now being organized in Philadelphia and another is planned for Chicago in the near future.

Wilber Statement

WASHINGTON, D. C., (Special)—An appeal is made to heating contractors by Joseph F. Wilber, director of the Plumbing and Heating Division, to lend their support to the current program of the war agencies to make available coal heating stoves in the fuel oil rationed area for the relief of residents suffering from oil shortages, and also for the replacement of oil-fired heaters.

Controls have been set up by WPB and OPA to provide stoves first for those areas which are being hardest hit at the moment—New England, New York, Pennsylvania, and New Jersey. After these areas are taken care of, the program will be extended to the other states which are under fuel oil rationing.

It is estimated that 150,000 stoves may be needed to take care of this phase of the conversion program. Manufacturers who have these stoves available are now notifying distributors and contractors concerning their stocks.

The Army has released for the program contracts for Number One Army stoves which may go to 50,000 units. The Army permitted transfer of the contracts to enable manufacturers to meet the emergency quickly.

Stove Rationing

Washington, D. C., December 18—Coal and oil heating stoves for private dwellings in the 30-state fuel oil rationing area are rationed beginning today, under an emergency request received by OPA from WPB.

The program, which virtually suspends sales of oil heaters in the 30 states, but makes coal heaters freely available to those householders who wish to convert from oil to coal, has two main objectives:

First, to stimulate further the conservation of fuel oil; and

Second, to assure that domestic coal-

(Continued on Page 75)

AUTOMATIC HEAT and AIR CONDITIONING Section

Customers Worried About Oil?

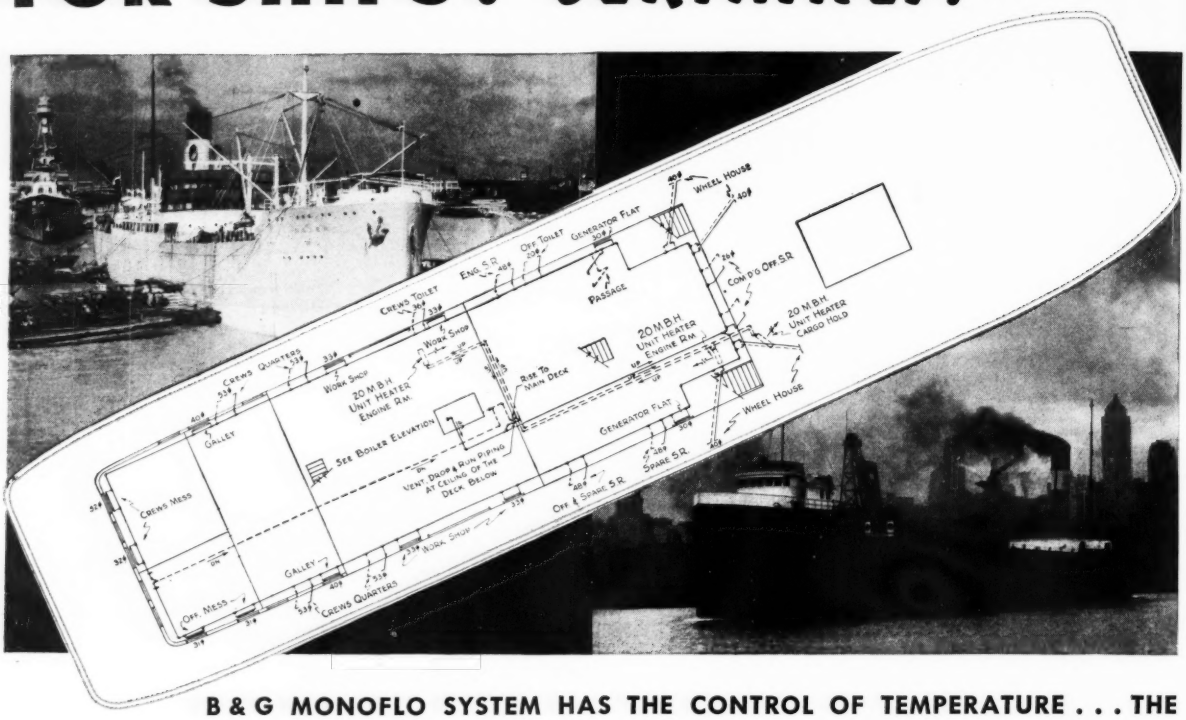
Few oil users know whether they are staying within their fuel oil allotments. Chart and tables in a following article will tell them how they stand, and will show them percentage of saving which must be made in order to heat home through winter. This is a No. 1 sales aid for contractor-dealer who will help customers in fuel conservation

So far it's been a very cold winter. Fuel oil users can, of course, wear more clothes, but generally they'll prefer to find ways of getting higher efficiency from their heating plants

See . . . Fuel Consumption Check Chart

(See Article, Page 70)

FOR SHIPS? CERTAINLY!



B & G MONOFLO SYSTEM HAS THE CONTROL OF TEMPERATURE . . . THE SIMPLICITY OF PIPING . . . THE INSTALLATION AND OPERATING ECONOMY WHICH MAKE IT MOST DESIRABLE FOR GLOBE-CIRCLING SHIPS

The same easy designing and simple B & G equipment employed for land installations are used with equally satisfactory results in ships.

CIRCULATING PUMPS
Depending on installation size, large B & G Universal Pumps or smaller B & G Booster Pumps provide the forced circulation in a B & G Monoflo System.

B & G STEAM CONVERTOR
Uses steam from the boiler to heat water for the heating system.

The *wide temperature range* of the B & G Monoflo System achieves a new and greater significance when applied to marine heating problems. For example, a vessel may be called upon to travel from the Equator to the Arctic. If the heating equipment is designed to meet conditions of maximum cold, *then only a system with a widely variable heat input can give the milder heat required by warmer climates!*

B & G Monoflo Heating is made to order for this condition. Water can be circulated through a longer temperature range than any other heating medium. The extremes of outdoor temperature can be met by merely varying the average temperature of the water in the heating system. *Automatically* the system furnishes heat in amounts which at all times are equal to the heat loss.

The simplicity of Monoflo piping and its easy adaptability to zoning make it ideal for the cramped spaces and extreme compartmentation of ships. In steam-driven boats, relatively small high pressure steam lines can be run to convertors serving each zone, with a definite saving in cost and in weight of material.

That's why the number of both Naval and merchant ships equipped with forced hot water heat is growing daily.

B&G

BELL & GOSSETT COMPANY

MORTON GROVE, ILLINOIS *(Suburb of Chicago)*
Canadian Licensee: S. A. Armstrong, Ltd., 115 Dupont St., Toronto

MONOFLO SYSTEM

PIPE INSULATION

. . . for Low Temperatures

These methods of applying insulation to low temperature pipe lines include preparation of surface, application of insulation to pipe and fittings, finish of insulation and methods of painting

GOOD practice in the insulation of low temperature pipe lines is set forth in a Recommended Commercial Standard for Mineral Wool now being circulated, for acceptance, by the National Bureau of Standards. This standard points out that when cold pipe lines, including flanges and fittings, are insulated with felted mineral wool, the insulation should be built up to a thickness not less than specified in Table I, for the various operating temperatures listed.

All surfaces to which the insulation is to be applied should be thoroughly cleaned and dried before application and, once the installation has begun, the system should not be put into operation until the application has been completed. Other rules for preparation of the surface state that the piping should be re-located, if necessary, to provide an uninterrupted clearance of at least 4 in. in all directions. Low temperature pipes should not be located adjacent to heated surfaces and pipe covering which may be subjected to abrasion should be suitably protected.

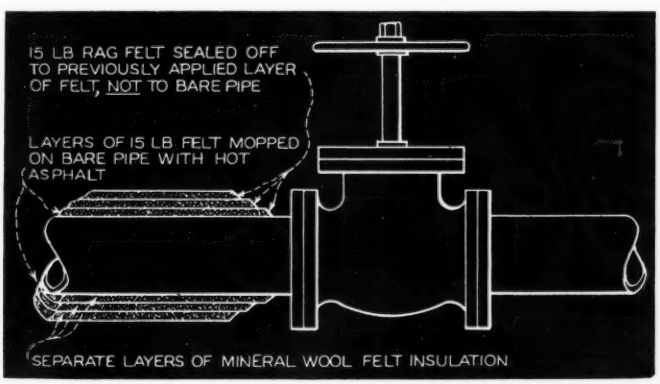
Table I—Minimum built-up thickness of mineral wool insulation required for various operating temperatures

Temperature—Deg F	Thickness-Inches
45 to 15	2
15 to —5	3
—5 to —20	4
—20 to —40	5
—40 to —60	6

The pipe surface to be insulated should be primed or mopped with hot asphalt or wrapped with a layer of 15 lb rag felt lapped at least 3 in. at all joints. For the complete application of low temperature piping see drawing at bottom of page.

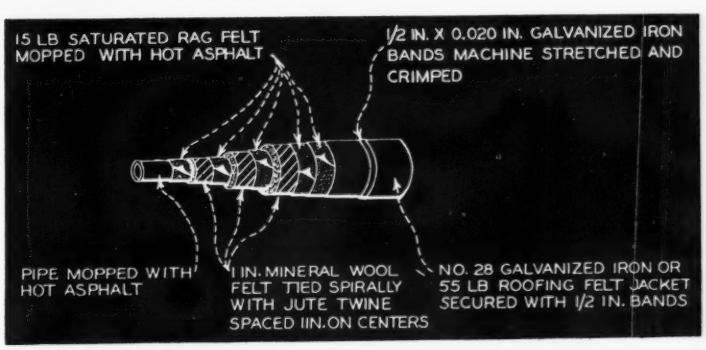
Wherever the pipe is interrupted by fittings, valves or flanges (and also at every 15 to 20 ft straight pipe) the pipe insulation should be carefully sealed off as shown at left. It is recommended that each layer of felted mineral wool be sealed at these points by carrying the 15-lb rag felt down to the previously applied layer of rag felt, not down to the bare pipe in each case. All fittings should be insulated in the same manner as on adjacent straight piping. Where pipe and fitting insulation meet, the 15 lb rag felt applied

(Continued on Page 103)


15 LB RAG FELT SEALED OFF TO PREVIOUSLY APPLIED LAYER OF FELT, NOT TO BARE PIPE
LAYERS OF 15 LB FELT MOPPED ON BARE PIPE WITH HOT ASPHALT
SEPARATE LAYERS OF MINERAL WOOL FELT INSULATION

AUTOMATIC HEAT and AIR CONDITIONING Section

The recommended method of insulating around fittings and valves is shown in the drawing above. The drawing at the right shows how the insulation and the saturated rag felt should be applied to straight runs of piping


15 LB SATURATED RAG FELT MOPPED WITH HOT ASPHALT
1/2 IN. X 0.020 IN. GALVANIZED IRON BANDS MACHINE STRETCHED AND CRIMPED
PIPE MOPPED WITH HOT ASPHALT
1 IN. MINERAL WOOL FELT TIED SPIRALLY WITH JUTE TWINE SPACED 11 IN. ON CENTERS
NO. 28 GALVANIZED IRON OR 55 LB ROOFING FELT JACKET SECURED WITH 1/2 IN. BANDS

HOW to Show Customers How Much Oil Must Be Saved . . .

Chart and table answer the biggest question of fuel oil users and pave the way for sale of fuel conservation services by the contractor.

AUTOMATIC HEAT and AIR CONDITIONING Section

OIL users do not know whether or not they are staying within their allotment. This fact, one of the biggest difficulties to administration of fuel rationing, is also a big deterrent to heating plant improvement. If the user knows that he is exceeding his allotment, he is a logical prospect for the fuel conservation services which the heating and plumbing contractor can provide.

The accompanying chart and tables are designed by DOMESTIC ENGINEERING to enable the contractor to show his customers exactly where they stand with respect to their allotments. The chart and tables may be used in personal interviews with fuel oil users, or this article may be given to local newspapers so that the information can be given even broader circulation—with resultant beneficial effects—in the community.

The first step in using the chart is to determine how much oil the customer has been allotted for the current heating season. This can be figured by counting the total number of coupons originally received and adding this to the amount of oil listed as on hand in the original application.

The second step is to divide the total allotment by five (because OPA has divided the heating season into five periods of approximately equal degree days and has based the coupon system upon these periods). This step furnishes the figures to go into the vertical scale at the left-hand side of the chart. At point 1, for example, the figure representing one-fifth of the total allotment is inserted; at point 2, the figure representing two-fifths of the total allotment is inserted, etc.

The third step is for the customer to determine the amount of oil actually used since October 1. This is done by adding all purchases since October 1 to the amount on hand at that date; then subtracting the amount on hand. This gives the amount used thus far.

The fourth and final step is to locate on the vertical scale at the left the number of gallons used so far. From this point, draw a horizontal line until it intersects the vertical line representing the date on which the calculations are made. If this intersection point is below the curve on the chart, the customer has used less oil than his ration permits. If the intersection point is above the curve, he has used too much.

As an example, assume that John Jones was given coupons totaling 800 gallons, and he had an original 200 gal-

lons in his tank. His total allotment, therefore, was 1,000 gallons. This total divided by five allows 200 gallons for each heating period. (These periods are shown by vertical lines in the chart.) At point 1, on the left-hand side of the chart, John Jones marks 200 gallons; at point 2, 400 gallons; at point 3, 600 gallons and so forth.

Today (January 13) John Jones finds that he has 100 gallons in his tank. He has bought 500 gallons and he had 200 gallons to start with, which means that he has used a total of 600 gallons to date. Six hundred gallons is now located as being at point 3 on the chart. A horizontal line is drawn from this point, and it is discovered that this line intersects the vertical date line for Jan. 13 at a point considerably (and dangerously) above the curve. It is further discovered that the customer should not have used more than approximately 430 gallons; in other words, he has used some 170 gallons more than he should have.

This means that John Jones becomes an automatic prospect for control equipment, a heating plant check-up, insulation, etc.

The case of Mr. Jones is an extreme one, but the contractor will find many other cases where the home owner has been equally improvident. Few users, in fact, are staying within their allotment. Practically all, when they discover their situation, are logical prospects for fuel conservation work.

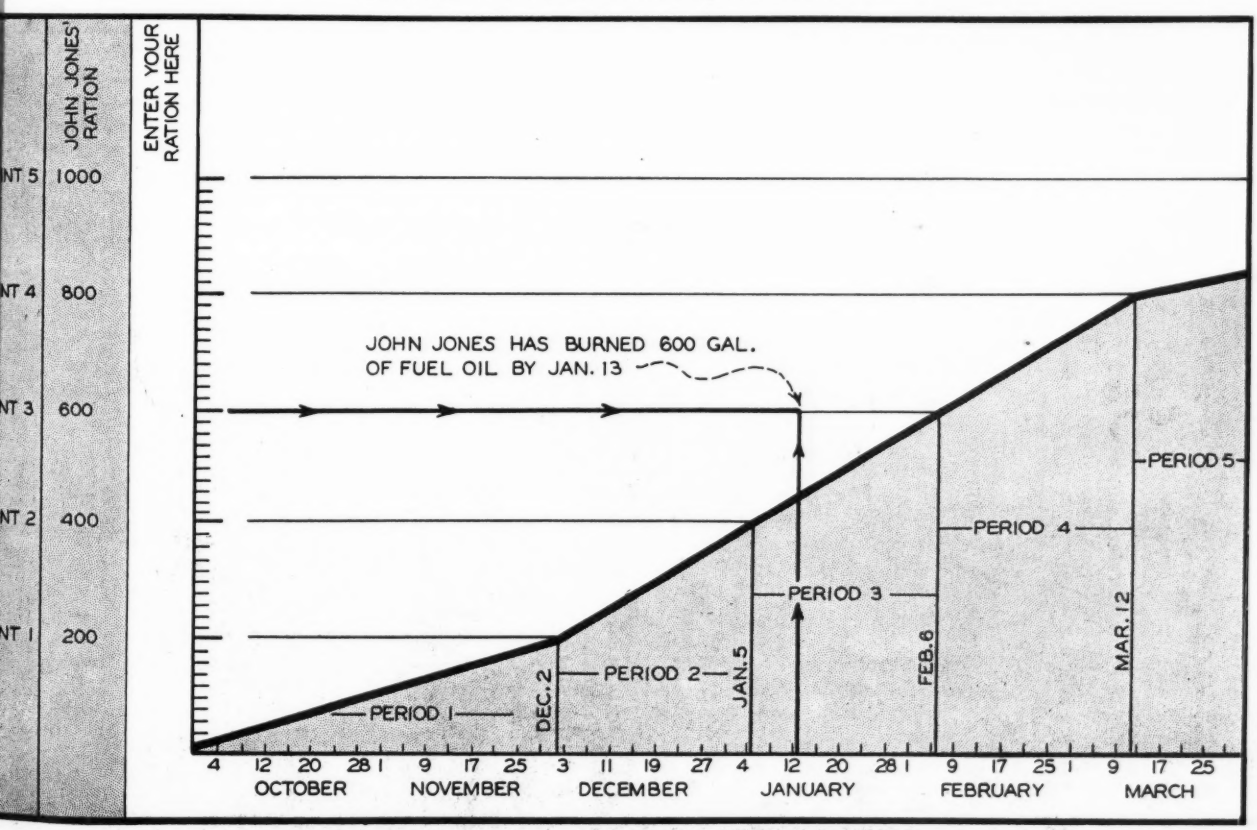
The chart reproduced with this article is drawn for Zone B, but it can be used for reliable approximations in the other zones, inasmuch as the degree day pattern does not differ greatly.

The accompanying table has been designed to supplement the chart and to provide similar information when the inventory is made on any of the dates shown.

The fact that third period coupons in the Middle West have been increased 10 per cent in value (decreased 10 per cent in New England), does not appreciably affect the chart and table. The difference in a full season's allotment is only two per cent from normal in each case.

Date of Inventory	Percentage of Year's Allotment Which Should Not Be Exceeded Per Cent	Date of Inventory	Percentage of Year's Allotment Which Should Not Be Exceeded Per Cent
October 7	0.7	January 6	38.0
October 14	2.0	January 13	42.0
October 21	3.0	January 20	47.0
October 28	5.0	January 27	51.0
November 4	7.0	February 3	56.0
November 11	9.0	February 10	60.0
November 18	12.0	February 17	64.0
November 25	15.0	February 24	68.0
December 2	18.0	March 3	72.0
December 9	22.0	March 10	75.0
December 16	26.0	March 17	79.0
December 23	30.0	March 24	82.0
December 30	34.0	March 31	84.0

In this chart, the curve represents the normal degree day pattern on which the five heating periods are based. Fuel burned is entered on vertical scale at left, and line is drawn therefrom un til it intersects vertical line from date of inventory. If intersection point is above curve, user is exceeding his allotment



News of Contractors . . .

N. Y. Dinner

An unusually large attendance marked the annual dinner and entertainment of the Heating, Piping and Air Conditioning Contractors New York City Assn. at the Hotel Astor on December 3. The approximately 800 people there included heating contractors as well as a great many manufacturers and engineers.

The work of the association this year is headed by William H. Johnston, president; Arthur E. Magher, vice president; Thomas F. Hall, treasurer; Robert B. Miller, secretary, and a board of directors including Messrs. Johnston, Magher, Hall and Rowland Tompkins and Leon L. Munier.

Chicago Honor Roll

The Plumbing Contractors Assn. of Chicago is establishing an honor roll for sons and relatives of master plumbers now serving in the armed forces. The list will be posted in the association rooms.

Master Plumbers James F. Walsh and Sievert Voland, both of Chicago, are now in the service, Mr. Walsh with the Navy, and Mr. Voland in the Army. Sixty-five plumbing apprentices from Chicago are also in the armed forces.

Ships Sweating

The means to provide conditioned air for the delivery of vital war equipment and foodstuffs to the far corners of the globe—sweat-free cargo ship holds—were discussed at the December 2 meeting of the Golden Gate chapter, ASHVE, in San Francisco.

In the absence of Pres. J. F. Kooistra, Sec. C. L. Peterson presided and introduced the speaker, Lawrence Dake, western representative of Cargo Caire Corporation. Mr. Dake pointed out the obvious need for reducing excess moisture in ships' holds which causes sweating and oxidation of metal surfaces of guns, tanks and trucks and cargoes of sheet metal and structural shapes, and the rusting of the structure of the ship, itself. Sweating arises from various causes, chiefly the temperature differential obtained when cooling sets in due to snow or cold rain on the metal deck and the contact of cold ocean water on the ship's side.

S. F. Hi Jinks

The war hit San Francisco's plumbing and heating industry in a vital spot when it knocked out the golf tournament tentatively set for December 17. But officers and members of the Plumbing and Heating Club of the Bay City saw it coming in the form of gas rationing and a caddy shortage, so the official tourney was not announced—or played. This was the first blank drawn by these golfers since the club was organized in 1926. But a score of members and guests pooled auto-space and played an informal round at a close-in course.

The Hi Jinks party, itself, was never in danger. Bigger and better than ever this year, it drew 500 to the Palace Hotel, December 17, where Entertainment Chairman Elmer K. Ross provided a program of fast-moving fun and fanfare that lasted until midnight. Every branch of the industry was heavily represented. Pres. John F. Heil presided; and Executive Sec. Hal Sales acted as behind-the-scenes expediter.

Highlighting the evening was the presentation by President Heil to Past Pres. F. F. Elliott, of a handsome traveling bag.

Among those attending were past state M. P. A. president J. J. MacLeod; past president of the local association, E. A. Balling; state vice pres., Daniel J. Hayes and many other master plumbers from San Francisco and the northern California area. Uniforms of the armed services were much in evidence, being worn by Arthur Balling, W. H. Graves, Kenneth Knight, Ed Baer and others.

N. C. Convention

The annual mid-winter convention of the North Carolina Assn. of Plumbing and Heating Contractors was held at Charlotte, N. C., December 7 and 8, and was featured by special clinics on priorities and OPA regulations.

The priority clinic was conducted by L. H. Kise, of the priorities division of the War Production Board. C. M. Simpson, business specialist of the Office of Price Administration, conducted a

Below: Part of the crowd of 800 persons who attended the ann ual dinner of the Heating, Piping and Air Conditioning Contractors New York City Assn. at the Hotel Astor on December 3

clinic on "General Regulations as They Apply to Plumbing and Heating."

Pres. C. C. Davis of Wilmington presided over the convention, which included a banquet and dance. Speakers included: W. F. Morrison, of Raleigh, executive secretary of the North Carolina State Board of Examiners of Plumbing and Heating Contractors; L. P. Paschall, of Durham, who delivered the invocation; R. A. Bashford, of Raleigh, who responded to the address of welcome by City Councilman A. Z. Price of Charlotte and reported to those who attended for the credentials committee.

R. M. Kermon, of Wilmington, executive secretary of the North Carolina association; W. H. Hunt, of Durham, who reported for the auditing committee; Congressman John Kerr, Jr., of Warrenton, N. C., the banquet speaker; and W. R. Dosher, of Wilmington, N. C., former secretary of the NAMP, who served as toastmaster at the banquet.

Officers of the North Carolina Assn. are: C. C. Davis, of Wilmington, president; R. A. Bashford, of Raleigh, first vice president; I. C. Walker, of Charlotte, second vice president; and N. E. Brewer, of Winston-Salem, secretary and treasurer. The Charlotte convention program committee was composed of I. C. Walker, H. L. Hopkins, J. H. Johnston and A. Z. Price.

N. H. Association

Price ceilings, transportation problems and oil-to-coal conversion were among the problems discussed at a recent meeting of the New Hampshire Master Plumbers' Assn. at the Rice-Varick hotel in Manchester. About 100 members attended.

Pres. J. Vincent Moran, of Manchester, introduced the following speakers: John W. Keller, chief of the industrial materials section of OPA in New England; Thomas H. Hagan, district manager of WPB; and M. M. Clifford of the Concord office of ODT.

The session opened with business meetings of the association, with Mr. Moran presiding. The auxiliary met with Mrs. Moran, its president, as chairman. A turkey dinner preceded the speaking and program.

Water Pipe Code

An analytical and interpretative talk on the standard water pipe code sponsored by the organization was delivered at the monthly meeting of the Pacific Coast Plumbing Inspectors Assn., held in the Civic Center Building, Los Angeles.

H. W. Hayes, representing the Municipal Water Department, gave a talk on the water code. He was followed by Charles M. Swinnerton, Los Angeles plumbing contractor, who stressed the need for developing cordial relations among the inspectors' association, the master plumbers and the public.

Christmas Party

The Los Angeles Merchants Plumbers Assn. held its annual Christmas tree party the afternoon of December 20 in the association's hall.

The association's meeting on the night of December 14 was put off in favor of ladies' night. Following a dinner in the hall, a program was presented under the direction of Preston Freeman, chairman of the entertainment committee, and John F. Sullivan, business manager.

Cleveland Dinner

The Cleveland Women's Auxiliary held a gala Christmas dinner December 9, with men of the Cleveland Assn. as guests. Mrs. N. Gilman, auxiliary president, baked two large cakes which were decorated in red, white and blue, and all members assisted in preparing the other food.

Following the dinner, officers were elected as follows: Mrs. Edward J. Sweeny, president; Mrs. I. R. Kiel, vice president; Mrs. Ben Rothman, second vice president; and Mrs. Edward D. Maurer, secretary-treasurer.

NOW....

A PROVED, ONE-PIECE *plastic* FLOAT *by* GOOD!

PLASTICS have earned their permanent place in the plumbing specialty field! And GOOD has earned a leading position in the production of plastic plumbing specialties by developing a new one-piece all-plastic seamless tank float.

Because of its exclusive one-piece construction, this new GOOD Plastic Tank Float is virtually indestructible, It is buoyant, stronger, longer wearing; less subject to deterioration. That's why we are so confident that the GOOD All-Plastic Tank Float will sell as readily in the post-war period as in this day of material shortages.

Don't overlook this opportunity to merchandise the newest and most outstanding in the field of plumbing specialties — the GOOD One-Piece All-Plastic Tank Float.

- EXCLUSIVE ONE-PIECE MOLDED CONSTRUCTION
- NO WEAKENING JOINTS
- EXTRA STRONG FOR LONGER SERVICE!
- CORROSION-PROOF!

FIRST *in the field!*

WRITE our New York office or contact your GOOD salesman for further details. Orders will be filled immediately on this priority-free product.

IF IT'S THE BEST IN PLASTICS IT HAS TO BE "GOOD!"

IMPROVED PLASTIC PLUMBING PRODUCTS BY GOOD!

● *New* PLASTIC FLUSH ELBOWS 2 x 4 x 6 2 x 5 x 7 2 x 6 x 8 2" Plastic Nuts

● *New* PLASTIC SHOWER CURTAIN HOOKS 12 Beautiful Colors

● *New* 1" OVERFLOW TUBES 1" GUIDE ARMS

GOOD MANUFACTURING CO., INC.

200-208 LINCOLN AVENUE NEW YORK, N. Y

Chicago ASHVE

The December 14 meeting of the Illinois Chapter, American Society of Heating and Ventilating Engineers, (held in the Merchants and Manufacturers Club, Chicago,) was devoted to the problems of members who are serving as technical consultants to fuel rationing boards.

John Howatt, chief engineer for the Chicago School District and a past national president, made the introductory talk and introduced the speakers. Mr. Howatt is serving as chairman of the panel of 50 consultants whose names were suggested to OPA by the chapter.

The meeting was largely devoted to concrete questions which the consultants have encountered in their duties. Matt Kilgallon, state fuel rationing representative, and Dale Larish, regional fuel rationing representative, made the principal address. Mr. Larish presided at the question and answer session.

Relaxes Rules

The city plumbing board of Hutchinson, Kan., has pledged itself to cooperate in plans to permit remodeling of old houses into apartments to relieve the city's acute housing shortage. The board has agreed to approve such methods and materials as are available provided they do not jeopardize sanitary conditions.

In some cases, temporary approval will be given to substitute materials.

Cincinnati Elects

The following officers have been elected by the Cincinnati Master Plumbers Assn.: A. Ambrosius, president; F. Nemann, vice president; J. Gleske, treasurer; H. Vonderheide, secretary; and J. Coors, sergeant-at-arms.

On the board of directors are J. Bedinghaus, P. Hollaender and G. Lewin. R. Schwart, retiring president, was presented a gift.

Housing Manual

A new guide for heating and plumbing contractors, a booklet entitled "War Housing Manual, Including War Housing Critical List and Procedures for Processing Applications," was issued December 12 by the Housing Branch, Construction Bureau of WPB. The pamphlet is designed to present a digest of procedures and requirements covering the filing and processing of applications for war housing.

All contractors who plan to work on defense housing projects should procure copies, since the pamphlet is devoted largely to describing measures designed to conserve all critical materials.

It is emphasized that designs must be of the simplest type and in keeping with the War Housing Critical List, the War Housing Construction Standards, Emergency Plumbing Standards and Housing Utility Allowances. The message is directed toward all persons concerned with construction work, but emphasizes that problems of interested parties should be taken to the contractor—making it doubly important that he understand the provisions.

Copies may be procured by writing to the Government Printing Office, Washington, D. C.

Wilber Interview

(Continued from Page 41)

know exactly what to expect in the way of controlled materials.

To illustrate how unpredictable is the picture of controls and regulations for 1943, Mr. Wilber points to the concentration program, which in general the plumbing and heating industry may expect to come under this year. Recently, WPB officials and members of the industry would have said that plumbing china work offered a likely field for concentration. However, the Army has come through with a request for a certain type of china work which may increase production in this field rather than reduce it to a concentration item.

The simplification program will take on renewed activity this year. Economic Stabilization Director Byrnes has asked the Division of Civilian Supply for a report on this program as a basis for cutting civilian commodities to rock bottom needs, if future situations demand it.

Further soil pipe simplification studies are now in progress in the Plumbing and Heating Division.

Little CMP

(Continued from Page 40)

of outlets that would have to be dealt with. If the heating and plumbing contractor were the only type of outlet, it might be possible to learn requirements at the retail end as the present CMP learns material requirements of each product from the manufacturer, but officials point out that the job of getting reports from hardware stores, dime stores, and other miscellaneous outlets of varied type would make retail control impractical.

If all manufacturers handled distribution through wholesalers, the job of controlling distribution woud be easy. But here again there is a variety of distribution methods operated through brokers, agents, and direct-to-contractor

Right: Thomas C. Douglass, director; A. S. Whitmore, manager, HP&ACC Assn.; and E. A. Balling, past president, San Francisco, MPA, at the San Francisco Hi Jinks, December 17

Below: George Y. Morton, executive secretary, and Daniel J. Hayes, president, San Francisco MPA; Otto Anderson; and William Cook, vice president, San Francisco, MPA, as they participate in the annual Hi Jinks festivities

selling. All these difficulties are set forth by Plumbing and Heating Division officials to show how formidable is the problem of setting up a control system that would direct each product manufactured under CMP into an essential end use.

Stoker Sales

(Continued from Page 43)

had been immediately available, Mr. Norris says, it would have been impossible to provide the labor to install them. One boiler company which had previously believed it could fill all orders within three days had so many orders that it was unable to promise delivery within six weeks.

Mandatory conversion may not be extended beyond the eastern states this season, according to officials of conversion and conservation agencies, but it is a decided possibility for the next season in view of increasing military demands.

Coupons Cut

Washington, D. C. (Special)—Just a few days after the announcement that third period coupons in middlewestern states would be increased 10 per cent in value, Price Administrator Henderson announced that the coupons in New England states would be reduced in like degree for that period.

If fourth and fifth period coupons are returned to original valuations, the total allotments for the year are affected by only 2 per cent in each of these areas.

Mr. Henderson emphasized that action in the case of the Middle West was caused by the unusually cold December and that supplies of heating oil were available in the area. The cut in New England allotments was made necessary by the shortage of supplies in that region.

Stove Rationing

(Continued from Page 66)

burning heating stoves made from iron and steel recently diverted for this purpose by WPB find their way only into the hands of those who should have them.

New cooking stoves, new stoves designed to burn wood exclusively, and used stoves are not affected by the emergency rationing order.

Primarily eligible to buy a coal heater under the emergency order are householders who will use the new stove to replace oil-fired heating equipment. These persons merely are required to obtain a purchase certificate from their local War Price and Rationing Board and surrender their unused and unexpired fuel oil ration coupons.

L-41 Change

Washington, D. C., December 21—Present provisions that certain types of construction, necessary to the conversion or substitution of heating equipment to permit use of fuel other than oil, electricity and gas, may be undertaken without specific authorization, were extended today by the War Production Board to January 1, 1944.

Formerly the deadline was January 1, 1943.

The extension was included in a supplement to Construction Conservation Order L-41-b which also provides that the order will not apply to construction begun prior to January 1, 1944, which is necessary to the installation or application in buildings of certain materials and equipment.

These include insulation materials, air cell pipe coverings, weatherstripping and storm windows and doors.

War Housing

(Continued from Page 46)

procedures under which the government plans to create more than a million dwelling units for war workers during 1943. These plans are based upon an expected migration of 1,600,000 workers. Those issues also suggested programs for contractors who wish to take advantage of this market.

Satisfactory Thru the Years!
READ THIS LETTER FROM A THRUSH CUSTOMER
"Enclosed is our check to balance our account. While this may close our business transactions for the time being, the war will not last forever and you may be sure that your reasonable and cooperative attitude will assure your company our exclusive business at such time as we are again able to use your merchandise.
"Not only have your products been eminently satisfactory over the years, but your service and policy have been the fairest we have experienced."
KEEP 'EM RUNNING
THRUSH EQUIPMENT CAN STILL BE FURNISHED. We're proud that so many of our customers have written us letters like the above when conditions made it necessary to stop normal sales. We're still supplying Thrush equipment where government regulations permit . . . and doing our best to help maintain Thrush equipment already in the field at peak efficiency. Write us when we can be of service.
H. A. THRUSH & CO., PERU, INDIANA

Obituaries

Alexander E. Anderson

Brig. Gen. Alexander E. Anderson, of Forest Hills, Queens, N. Y., a member of the Heating Piping and Air Conditioning Contractors New York City Assn., died recently. He was commander of the 86th Infantry Division.

Dick Johnson

Dick Johnson, about 65, Champaign, Ill., former president of the Illinois Master Plumbers Assn., died December 19. He discontinued business for himself several years ago and at the time of his death was in the employ of the Reliable Plumbing and Heating Company of Champaign.

Benjamin Weil

Benjamin Weil, president of Weil-McLain Company, Chicago, died December 8. He was one of the founders of the manufacturing company which began business as Weil Brothers in 1892. His wife, two sons and one daughter survive him.

John A. McTaggart

John A. McTaggart, 49, died recently in Johnsonburg, N. Y. He was in business fifteen years in the North Park section of Buffalo, and founded the J. A. McTaggart Plumbing and Heating Company.

Abram B. Kolyer

Abram B. Kolyer, 75, died December 26 at his home in Summitt, N. Y. He was president of the Fred Adee Co., wholesale plumbing supply house in New York, for many years. In 1925 the company sold out to the W. A. Case Company, and Mr. Kolyer remained as chairman of the board of directors.

Frank G. Grady

Frank G. Grady, 77, retired member of the firm of F. W. Webb and Company, plumbing supplies, died recently at his home in Medford, Mass. His wife, three daughters and two sons survive him.

Al Smith

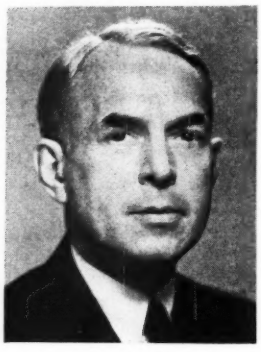
Al Smith, Joliet, Ill., well-known plumbing contractor, died recently. He had been active in the leadership of the Illinois Master Plumbers Assn.

Edward E. McNair

Edward E. McNair, 70, former vice president and director of the American Radiator Corporation, and president of the Pacific Steel Boiler Corporation of Detroit, Mich., died December 30 at his winter home in St. Petersburg, Fla.

Charles L. Crouse

Charles L. Crouse, 56, vice president of The National Radiator Company, Johnston, Pa., died December 12. His death came only five days after he had been honored on his 35th anniversary as a member of the company. He had served as vice president for fifteen



Charles L. Crouse

years and general sales manager for twelve years.

Joseph B. Weber

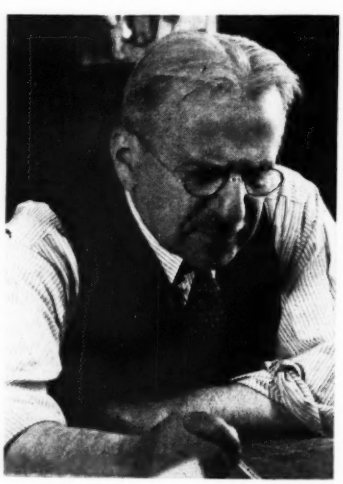
Joseph B. Weber, Chicago, who had been engaged in the plumbing business for more than 40 years, died recently at his home. His wife, five daughters and two sons survive him.

Edward Yeomans

Edward Yeomans, 77, died recently in Ojaii, Calif. He was formerly president of the Yeomans Pump Company.

Albert Kahn

Albert Kahn, 73, died at his home in



Albert Kahn

Detroit, December 8. A German immigrant, at the age of eleven years he started as an errand boy in an architect's office and before his death was an internationally known industrial architect.

Bert R. Smith

Bert R. Smith, 65, for many years a plumbing contractor in Lebanon, N. H., died recently. He was a member of the Master Plumbers Assn. of New Hampshire.

William C. Brandt

William C. Brandt, 73, for 45 years identified with the heating industry, died recently at his home in Detroit. He formed his own company in 1914, retiring only three years ago. Surviving him are his wife, four daughters and four sons.

George W. Bailey

George W. Bailey, long associated with Hajoca Corporation, Philadelphia, died recently. He entered the employ of the firm of Haines, Jones & Cadbury Company in 1904, later remaining with its successor, Hajoca Corporation. He served in various sales capacities from that of counter man to sales executive.

Frank H. Escott

Frank H. Escott, 60, died recently at his home in Wilmington, Del., after becoming seriously ill a few days previously. He had been in the plumbing contracting business since he was 22 years old, having started in Georgetown, Del.

Convention Dates

January 12—CHICAGO — Annual dinner and election of officers of the Plumbing Contractors Assn. of Chicago, to be held at the Blackstone hotel.

January 18-21 — ILL. — 50th anniversary convention of the Illinois Master Plumbers' Assn.; to be held at the Palmer House, Chicago.

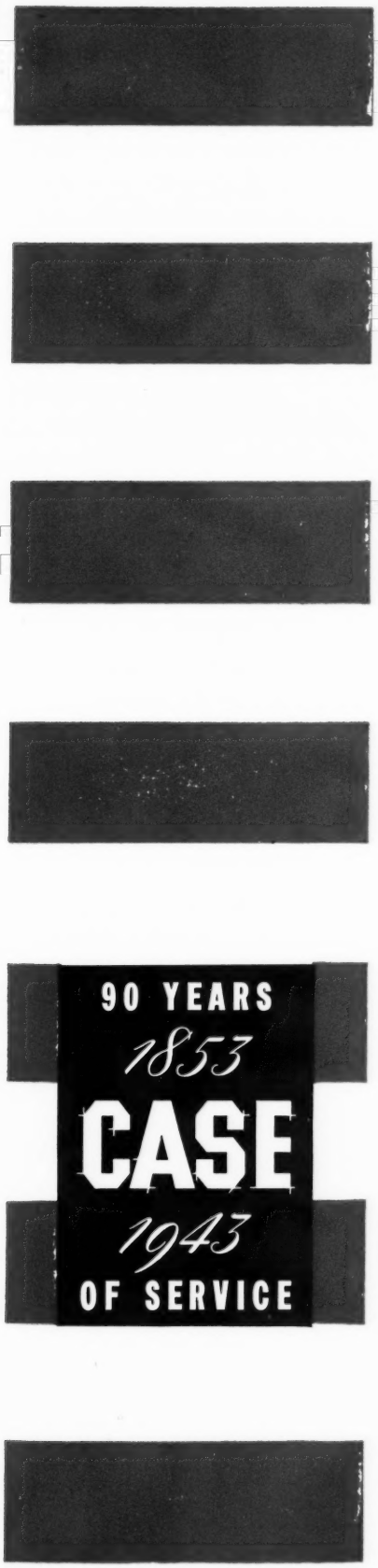
Jan. 25-27, 1943—ASHVE—The 49th annual meeting of the American Society of Heating and Ventilating Engineers; to be held in Cincinnati with headquarters at Hotel Gibson.

February 2 and 3—Wis.—49th annual convention of the Wisconsin Master Plumbers Assn., to be held at the Schroeder hotel, Milwaukee.

February 8-10—OHIO—52nd annual convention of the Ohio State Assn. of Master Plumbers, with headquarters at Hotel Netherland Plaza.

April 9 and 10—POWER CONFERENCE—Annual Midwest Power Conference, with headquarters at the Palmer House, Chicago.

June 8-11 — SMOKE PREVENTION ASSN.—37th annual meeting to be held in Pittsburgh, with headquarters at Hotel William Penn.



1853

90 YEARS
OF SERVICE

1943

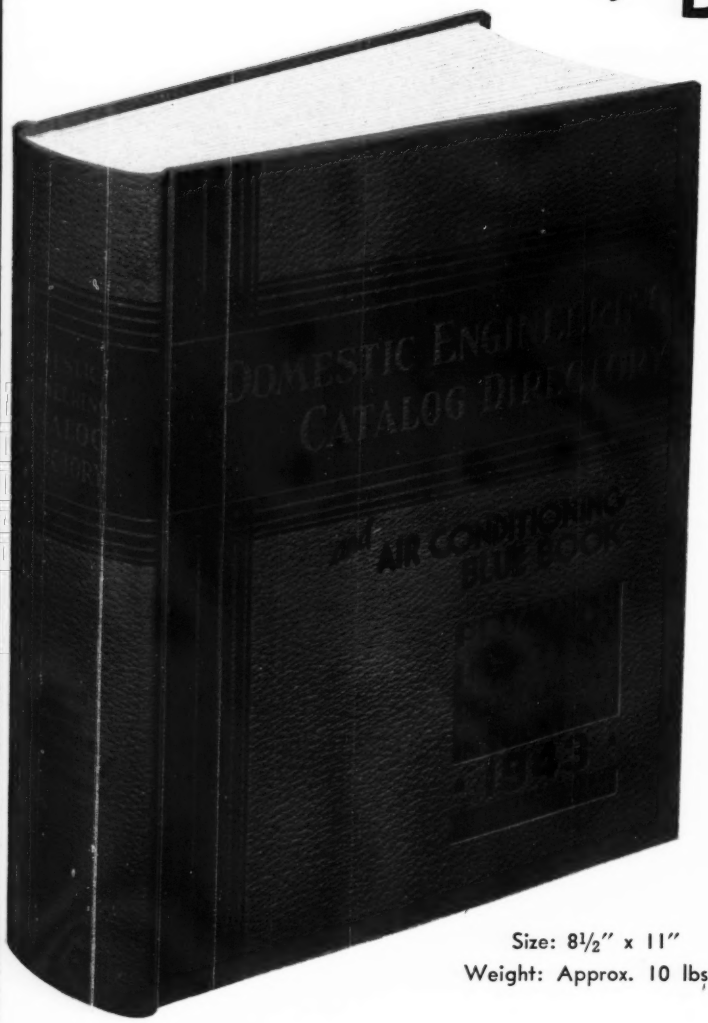
Now there can be only one event to celebrate—the Victory each of us so earnestly desires. Birthdays will occur, however, and so instead of making this, our 90th, the occasion for a celebration, we simply mark it by expressing our sincere appreciation of the confidence that you Master Plumbers have placed in us all these years. Without your belief in the worth of fine-quality plumbing and heating products, Case could not have served you and your customers so well in the past, and could not plan to serve you so well in the future.

W. A. Case & Son Manufacturing Company, Buffalo, N. Y.

CASE

VITREOUS CHINA PLUMBING FIXTURES
WELDED METAL PRODUCTS

The Big New 1943 Edition of DOMESTIC ENGINEERING CATALOG DIRECTORY will be READY SOON



Size: 8½" x 11"
Weight: Approx. 10 lbs.

The big new 1943 edition of DOMESTIC ENGINEERING CATALOG DIRECTORY will offer you the one complete source of purchasing and specifying information on products now available under war-time restrictions and ratings.

Regardless of the nature of your current business, whether it be in direct connection with defense or war projects or for essential civilian requirements, you'll find the 1943 DOMESTIC ENGINEERING CATALOG DIRECTORY to be a real Time-Saver in locating sources of supplies, writing specifications or making purchases.

ADVANCE ORDERS NOW BEING ACCEPTED

Because of the increasing need for the type of assistance which is available only through DOMESTIC ENGINEERING CATALOG DIRECTORY, an unusually heavy demand for the 1943 edition is anticipated. Advance Orders are now being entered in the order of receipt. To be definitely assured of receiving your copy of the 1943 edition, it is important that you place your order without delay.

THIS SPECIAL OFFER WILL SAVE YOU $2.00

Prompt action in ordering your copy of the big 1943 Catalog Directory will also assure you of the special pre-publication price of $5.50 . . . available only to those who order in advance of publication. Place your order NOW!

Five Big TIME-SAVERS

1 MANUFACTURERS' CATALOGS
In this section are the catalogs of individual manufacturers, prepared and assembled to give you complete buying and specifying information regarding the products of each co-operating manufacturer.

2 TABLES AND RULES
This section consists of hundreds of charts, tables, standard rules and layout diagrams and explanatory material necessary in the selection, coordination and design of equipment for heating, plumbing, refrigeration and air conditioning installations.

3 CLASSIFIED DIRECTORY
This section lists virtually every known product in the heating, plumbing and air conditioning industry and under each product are the names of all known manufacturers who make it. Cross references are used liberally.

4 TRADE NAMES
More than 8,000 trade names are listed in this section. Under each is the name and address of the manufacturer.

5 MFRS' NAMES AND ADDRESSES
This section includes the name, street address and city of every known manufacturer of heating, plumbing and air conditioning products and equipment.

Special PRE-PUBLICATION Offer

Good Only Until January 15, 1943

Regularly priced at $7.50, you may now obtain Your copy of the 1943 DOMESTIC ENGINEERING CATALOG DIRECTORY at the special pre-publication price of $5.50—transportation prepaid. BUT you must place YOUR ADVANCE ORDER NOW. Remittance must accompany order. C. O. D. Orders will be entered at the regular $7.50 price.

Save $2.00 — Place Your Order NOW

ORDER Your Copy Today!

Manufacturers & Wholesalers

A. C. Committee

Washington, D. C., December 22—Maintenance problems of commercial refrigeration and air conditioning machinery will be studied by a special subcommittee of the Refrigeration and Air Conditioning Industry Advisory Committee which was appointed at the advisory group's meeting in Washington last week.

Sterling Smith, general industrial equipment division, was government presiding officer.

To attack maintenance problems, the most critical facing the industry today, this sub-committee was appointed to study the three chief aspects of keeping equipment in operation: (1) manufacture of parts; (2) distribution of parts; and (3) manpower problems in installation of parts and repair of operating equipment.

The sub-committee is composed of three members: Marshall G. Munce, York Ice Machinery Company; A. B. Schellenberger, Alco Valve Company; and Frank S. McNeal, Universal Cooler Company. The sub-committee will report to the industry advisory committee at the next meeting which is scheduled for January 13.

Procedures for the industry under the new Controlled Materials Plan were discussed, with particular reference to bills of material.

At last week's meeting, the committee recommended to WPB a revision of the PD forms used to apply to WPB for permission to purchase new machinery. The single new form discussed is designed to replace this industry's use of six forms: PD-1A, PD-420, PD-616A, PD-615, one Treasury Procurement form, and one Lend-Lease form. The information furnished on the new form would contain basic data required if appeal under orders M-9-c, M-126, L-100, L-163, L-172, and L-123 is necessary. The committee also discussed proposed changes in Limitation Order L-38, which restricts manufacture and sale of refrigerating and air conditioning equipment, and made recommendations to WPB for such amendment.

Pipe Prices

Washington, D. C., December 31—Twelve warehousemen and jobbers today were invited by Price Administrator Leon Henderson to become members of a Merchant Pipe Warehouse and Jobbers Advisory Committee to serve as a liaison group with OPA on pricing problems and questions of resellers of merchant pipe products.

The appointment was made in response to requests from a number of members of the industry so there may be mutual consideration of questions arising under price regulation, as is provided in the Emergency Price Control Act of 1942.

The newly-appointed committee will serve in a purely advisory capacity, and may meet with OPA from time to time for discussion of price problems. As a result of these discussions, it may make such recommendations to the Administrator on industry problems as it believes advisable.

Those invited to serve are: Lucien W. Moore, Crane Company, Chicago; Allen Garland, American Radiator & Standard Sanitary Corporation, Pittsburgh; N. I. Higgenbottom, W. A. Case Co., Buffalo; John Sommers, Noland Company, Washington, D. C.; C. W. Day, Grinnell Company, Inc., Providence, R. I.; William Brecht, Hajoca Corporation, Philadelphia; Jack Albert, Albert Pipe & Supply Co., Brooklyn, N. Y.; Guy Stoughton, Midwest Piping & Supply Company, St. Louis; J. K. Friedman, Charles F. Guyton Co., New York; Charles Wilson, Horne Wilson Company, Atlanta; James P. Feely, Jr., Taylor Supply Co., Detroit; C. E. Munden, Jr., Standard Supply & Hardware Company, New Orleans.

Bluth's Statement

(Continued from Page 45)

dustry, is lost in the cataclysmic march of news and events. In spite of this, however, the mechanical coal stoker industry bids fair to emerge from the war in a strong position. Much stronger in fact than it was just before the United States entered the war. Because much of the industry has been converted to production of war goods and equipment, and the remaining part has kept busy producing and installing stokers for essential domestic and industrial needs, little time has been afforded for studies of possibilities in post-war years. But this has not hampered the efforts of responsible stoker manufacturers and their engineering and sales staffs to conduct investigational and research work in developing plans and products to meet post-war requirements.

Even more than in the last great World War, the stoker industry today is serving American industry and the American people in making extremely important contributions to both war production and civilian economy and living conditions. The needs for heat, steam, light, and power, are the greatest in history. They exceed the needs of any other country in the world; in fact, the needs of a combination of any other two or possibly three great world powers.

Mechanical burning equipment utilizing America's great and almost inexhaustible supplies of solid fuels is com-

Indicative of the vital job being done by industry, new gates have been installed at the Beloit Works of Fairbanks, Morse & Company showing an Army and Navy man saluting the worker who stands between them. The "V" above the worker's head is lighted with neon tubing

ing into its own. The mechanical stoker had its place during peace times and it was rapidly improving its position with commercial and industrial buyers and fuel-using home owners when the United States entered the war. But it remained for emergency war time conditions to really bring out the role that stokers were to play in America's all-out war program, not only with respect to helping to provide the additional heat, steam and power demanded from an expanding war industry, but in coming to the aid of thousands of users of liquid and gaseous fuels.

The manufacture of small stokers up to 61 pounds of coal per hour was discontinued on September 30, 1942, upon order of the War Production Board. A limited number of these stokers are still held in the hands of stoker dealers and distributors and they are being sold now in practically every instance to replace oil burners in the thirty states subject to fuel-oil rationing regulations.

Because of the urgency of the fuel oil situation, commercial and industrial size stoker manufacturing is continuing, with the approval of the War Production Board. Commercial and industrial stokers are also needed in plants devoting their output to war equipment and machinery. Worn-out stoker equipment must be replaced in these plants and new stokers are absolutely necessary in other

Marc G. Bluth

plants where war production facilities have been or are being expanded.

(Continued on Page 101)

Dec. Answer

(Continued from Page 64)

temperature difference and is calculated by the equation:

$$\frac{Tr-Tb}{70-Tb}$$

Tr=Room Temperature

Tb=Base Temperature = 0 deg. fahr. in this case

70=Temperature of Room on original heat loss calculation.

2. The heat loss of transmission of the radiator is decreased in this particular instance, for the reason that the temperature difference between the room air and steam in radiation is decreased and is calculated by the equation:

$$\frac{(Ts-70)^{1.3}}{(Ts-Tr)}$$

Ts=215 deg. (usual temperature used for calculating 240 BTU radiation.)

Tr=Room Temperature

70=Temperature of room on original heat loss calculation.

Equating these two we get the answer as follows:

$$\frac{Tr-Tb}{70-Tb} \times \frac{(Ts-70)^{1.3}}{(Ts-Tr)} = \frac{100-0}{70-0} \times \frac{215-70)^{1.3}}{(215-100)} = \frac{100}{70} \times \frac{(145)^{1.3}}{(115)} =$$

$1.42 \times (1.26)^{1.3} =$

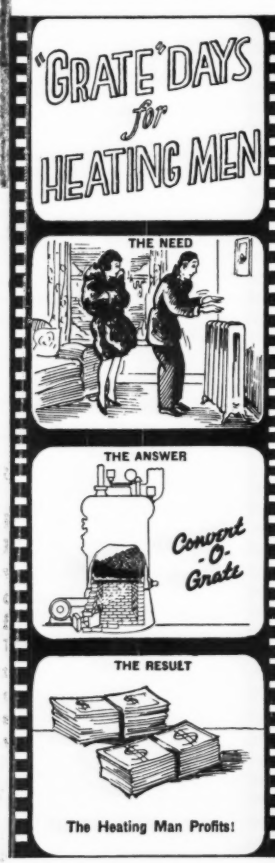
$1.43 \times 1.35 = 1.93$

$150 \times 1.93 = 290$ or 290 sq. ft. radiation required.

Iowa. C. W. Schultz.

Russell Transfer

The business of W. A. Russell and Company, Bridgeport, Conn., has been transferred to Bridgeport Brass Com-

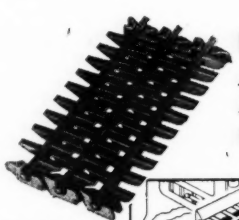


Convert-O-Grate....

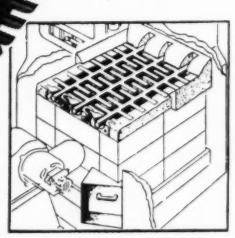
Your Key to Conversion Profits!

Months ago, when fuel oil shortages were merely a prediction, countless oil burner owners leaped to the opportunity to convert to coal with CONVERT-O-GRATE as a means of insuring their comfort throughout the long cold winter months. In each case a heating man solved the problem and profited accordingly.

Now that fuel oil shortages are a stark reality the utter need for CONVERT-O-GRATE is being keenly felt by homeowners in virtually all quarters! They want CONVERT-O-GRATE . . . and are ready to buy it! Here is a market that's wide open for you . . . *right now!* Business that you can convert into real money if you act quickly and cinch it with CONVERT-O-GRATE.



NOW... *Adjustable Shaker Arm* Where Desired



CONVERT-O-GRATE is now available (where desired) with a shaker arm that is adjustable to fit ashpits of various heights. Can also be fitted to existing CONVERT-O-GRATES. Even a novice can operate it.

CONVERT-O-GRATE offers advantages that appeal to practically *all* conversion prospects. It is adaptable to either coal or oil burning in 8 minutes time! It fits most gun type installations! It uses oil burner for draft! It is *dependable* from every standpoint! It costs less than conventional conversion jobs!

CONVERT-O-GRATE appeals to the dealer because it makes him Fuel Savings Headquarters in his community . . . because the price level which governs its sale assures him a substantial profit on every job . . . and because every installation creates a host of new live and interested prospects. Lose no time in getting complete details! *Write today!*

SALES REPRESENTATIVES: You wont find a faster moving item in the heating field today. Some territories are still open. Better wire for information.

We will accept telegram orders collect.

JERSEY OIL HEATING, INC.

277 COIT ST. IRVINGTON, N. J.

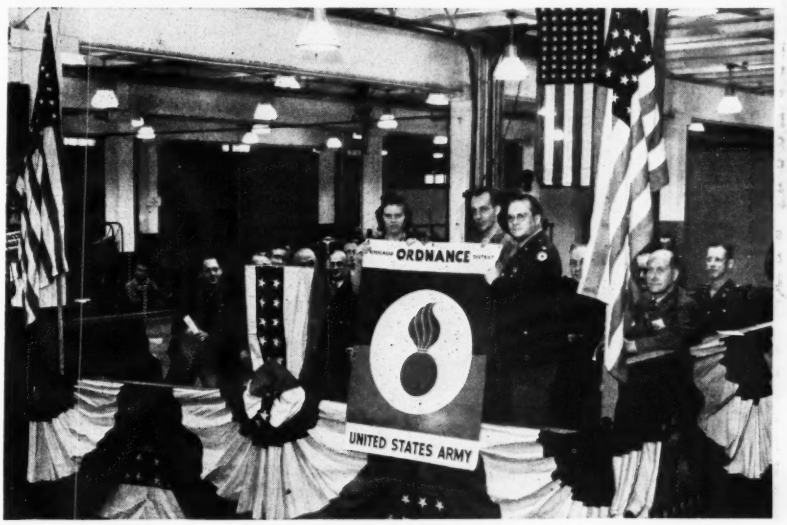
pany, Bridgeport, Conn., with whom W. A. Russell and Company has been closely asociated for many years. The business will in the future be conducted by the W. A. Russell Division of Bridgeport Brass Company. All matters pertaining to products manufactured by W. A. Russell should be addressed to the Division.

M-21-b

(Continued from Page 57)

Order M-21-b as amended today permits a warehouse to exceed its quota for the first quarter of 1943, provided that it keeps within its total allotment for the period January 1, 1942, through March 31, 1943.

The purpose of this arrangement is to permit warehouses to "catch up" on tonnages they would have received had they been able to obtain their full quarterly quotas during 1942. Because preference ratings assigned to warehouses have lagged behind the general level of preference ratings, warehouses have not been able to obtain their full quotas.



Top, right: The Army-Navy "E" awarded the Kansas Ordnance Plant, a Johns-Manville subsidiary, is displayed by Pres. Lewis H. Brown; Alexander Cromwell, operating manager of the plant; R. W. Lea, vice president in charge of finance; and S. A. Williams, vice president in charge of production

Right, center: the Army Ordnance banner awarded to L. J. Mueller Furnace Co., Milwaukee. The presentation was made by Maj. Frank Parker, and the banner was accepted by Miss Dorothy Johnson, oldest girl employee in point of service, and Ray Skorch. Right, below: Some of the 25 employees of Elkay Manufacturing Company, Chicago, now in the armed forces: (1) Corp. Henry Engel; (2) P.F.C. John Rusin; (3 Corp. I. H. Belza; (4) Pvt. John Genoar; (5) Pvt. Bruno Lakus; (6 Pvt. A. Jedziniak; (7) Pvt. Ambrose Hurst; (8) P.F.C. Sebastian Zahn. Below: Telegram received by Warren Barr Supply Co., Chicago, from the Navy. This honor for supply companies is similar to the "E" award for manufacturers

CLASS OF SERVICE
This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

WESTERN UNION

SYMBOLS
DL = Day Letter
NT = Overnight Telegram
LC = Deferred Cable
NLT = Cable Night Letter
Ship Radiogram

A. N. WILLIAMS, PRESIDENT — NEWCOMB CARLTON, CHAIRMAN OF THE BOARD — J. C. WILLEVER, FIRST VICE PRESIDENT

The time time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

WB285 98 5 EXTRA GOVT=CA WASHINGTON DC NOV 25 548P
TO THE EMPLOYEES OF WARREN BARR SUPPLY CO=
900 NORTH SPAULDING AVE CHGO=

IN SUPPLYING ESSENTIAL PLUMBING EQUIPMENT TO THE GREAT LAKES NAVAL TRAINING STATION AND THE GLENVIEW NAVAL AIR BASE, YOU ARE MAKING AN IMPORTANT CONTRIBUTION TO THE WAR EFFORT. COMFORTABLE QUARTERS FOR THE MEN ARE A VITAL FACTOR IN MAINTAINING MORALE AT FIGHTING PEAK, AND NO CAMP OR BARRACKS CAN BE PUT IN COMMISSION WITHOUT FACILITIES SUCH AS YOU SUPPLY TO THE NAVY. IN THIS TOTAL WAR, SMALL BUSINESS AS WELL AS BIG, HAS ITS ROLE TO PLAY. THE NAVY CONGRATULATES YOU AS MEMBERS OF A SMALL ORGANIZATION THAT IS DOING ITS PART WELL=
/S/ C H WOODWARD REAR ADMIRAL USN (RET) CHIEF OF THE INCENTIVE DIVISION USN.

At the fuel rationing meeting of the Illinois Chapter, ASHVE: le ft, Matt Kilgallon, state fuel rationing representative; Dale Larish, regional fuel rationing representative; John Howatt, chairman of the technical consultants committee. See story on page 74

Gossett Named

E. J. Gossett, Chicago, president of Bell & Gossett Company, Morton Grove, Ill., has been appointed chairman of the 1943 finance committee of the Plumbing and Heating Industries Bureau by H. O. Nelson, president.

Other members of the committee are: J. E. Heaslett, secretary-manager, Northern California Plumbing and Heating Wholesalers Assn.; Herbert V. Kohler, president, Kohler Co.; E. C. Marsden, president, Plumbing and Heating Wholesalers of New England; T. W. Merryman, president, National Assn. of Master Plumbers; P. R. Mork, vice president, Crane Co.; Harry G. Morrow, manager of sales, standard pipe and conduit, Spang Chalfant, Inc. George P. Nachman, president, Heating, Piping and Air Conditioning Contractors' National Assn., and C. C. Weiland, president, Central Supply Company.

Myers Calendar

In step with its tradition of more than 50 years standing, The F. E. Myers & Bro. Co., Ashland, Ohio, is again this year sending calendar posters to its dealers. About 40,000 copies will be mailed between Christmas and New Year's, so they will reach distributors by the first of the year.

Requisitioning

Washington, December 14—In a press release (OPA-T-264) issued on November 4, relating to prices offered by the Copper Recovery Corporation for idle or excessive inventories of copper and copper base alloy products, it was stated: ". . . the War Production Board points out that sale of all items listed is not compulsory, and will not be sought through requisitioning. Among these are products whose cost was substantially above the 28 and 30 cents a pound maximums the government offers."

In order to avoid misinterpretation, the Materials Redistribution Branch of the War Production Board makes it clear that, if necessary, the government will requisition:

1. Any and all copper and copper base alloy products in primary form except those whose cost to the holder was substantially above the 28 and 30 cent maximums mentioned in the copper recovery price schedules, and

2. Any and all copper and copper base alloy fabricated products, except those which have been fabricated from primary forms whose cost to the holder was substantially above the 28 and 30 cent maximums mentioned in the copper recovery price schedules.

These exceptions are clearly indicated in the copper recovery price schedule, and there are no others.

Biggest Project

Biggest building job of 1942 was the pentagon-shaped War Department Building at Arlington, Va., which has 25 miles of offices and will house 40,000 workers.

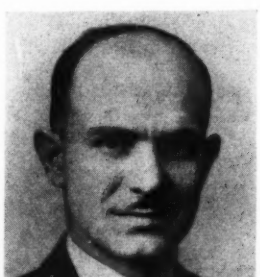
John E. Haines, official of the Minneapolis-Honeywell Regulator Company, has his own way of telling just how big this is. Haines set out at 9 o'clock one morning to visit the 34 engineers and steamfitters who were installing controls for the building's air conditioning system. He covered every floor of the structure's five sides, each of which is a fifth of a mile long, and at 5 p. m. he still hadn't caught up with his men, although several times he found where they had been working.

News Briefs . . .

William B. Henderson, executive vice president of Air Conditioning and Refrigerating Machinery Assn., Washington, D. C., has been granted a temporary leave of absence, Pres. Charles E. Wilson has announced. Mr. Henderson has been ordered to immediate active duty as a lieutenant in the United States Naval Reserve. He was a pilot with the Royal Air Force in World War I.

The Youngstown Steel Products Company recently moved its Washington, D. C., sales office into new quarters in the Bowen Building, 815 Fifteenth St., N.W., according to a recent announcement.

The Brown Fintube Company, Elyria, Ohio, has announced the appointment of B. DeLorenzo as manager of the Heat Transfer Department. He was



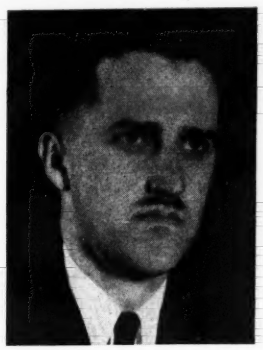
B. DeLorenzo

formerly design engineer for the Oil Division of Foster Wheeler Corporation, New York.

John H. Romann, chief metallurgist of Tube Turns, Louisville, Ky., was recently appointed chairman of a committee to conduct a special nation-wide investigation in industrial plants concerning the low temperature properties of

metals. The research is being carried on for the War Department. Mr. Williams has been granted a leave of absence from Tube Turns to do this work.

Food Machinery Corporation, Los Angeles, has established a new division—**Food Machinery Corporation, Division of Procurement and Engineering.** James M. Hait, chief engineer of Peerless Pump Division, has been selected general manager of the newly formed division.



James M. Hait

William A. Brecht, president of Hajoca Corporation, Philadelphia, has been appointed to a post as consultant to the Plumbing and Heating Branch of WPB. He has had 48 years' experience in the manufacturing and distribution of plumbing and heating, as well as industrial and marine equipment. He served in the Pennsylvania Naval Militia during the Spanish-American war.

The Kokomo Sanitary Pottery Corp. plant in Kokomo, Ind., was badly damaged by fire on Christmas Eve. In a statement, Max Gerber, president, said: "Although the loss of our plant represents ten years of effort of my associates and myself, we are primarily concerned about the welfare of the company's employees and the indirect loss to the people of Kokomo. It is our intention to do everything humanly possible to reconstruct the plant as rapidly as present conditions will permit. At the time of the fire we were producing pottery for governmental agencies and were making every effort to further the war effort."

The Pittsburgh Tube Company has announced the appointment of J. C. Vandermast as manager of pipe sales. He has been with the accounting department, acted as cost accountant, been in the sales department, and has been assistant to R. B. Wilfong, vice president in charge of sales.

W. P. Hopkins has been appointed purchasing agent of the Tuthill Pump Company, Chicago. Mr. Hopkins was formerly assistant purchasing agent for the ordnance plant at Marion, Ohio.

F. A. Rickly, formerly with the St. Louis sales office organization of American Radiator & Standard Sanitary Corporation, is now a lieutenant colonel in the Army and is stationed at Camp Crowder, Neosho, Mo., where he is executive officer in the infantry. He had been with the corporation in the St. Louis territory for nearly 30 years.

Col. F. A. Rickly

INTRODUCING

New Items in the "Master" Line of Victory Plumbing Ware

Practical, Durable, Attractive products made of materials less urgently needed by our armed forces.

NEW SINK AND TRAY STRAINER

For use with Steel, Ceramic or Iron Enamelware

"Master" all-purpose sink strainer for all 2" drilling—used in iron enamel, steel and ceramic sinks or tubs. 1½" IPS male thread for flanged tailpiece; also fine thread female for straight tailpiece.

EXPEDITOR SUPPLIES...

to be used with regular or center set lavatory fittings. Expeditor Supplies save valuable time as you can make connections in a fraction of the usual time—eliminate many fittings. Any degree of bend or offset. Wire or mail us your specifications and problems. "Expeditor" will solve them.

"We are 'Master' Products. Get to know us well. Call on us now for government projects, housing jobs, civilian maintenance and repairs. We will help you earn new profits while we replace our cousins who are fighting for our country. Our government recommends us highly. We are a growing family with a future, and will be with you during and after the war."

SPECIAL NOTICE! Along with the many items illustrated in our catalogue, we have in stock and are in position to furnish many others not shown. Your inquiries may reveal that we have just the items you need.

Thank you for the fine response and many orders for:

The new "Master" Plastic P. O. Basin Plugs.

The new "Master" One-piece Plastic Closet Ells.

The new "Master" Adjustable Iron Traps.

For complete description of above "Master" products, see our advertisement Page 73, November 1942 Domestic Engineering.

JONAS HAIES & COMPANY

Home of Challenger, Monarch and Master Products

20 BERGEN STREET BROOKLYN, N. Y.

News of Women . . . . .

Field of Honor

Following is a message from Mrs. Joseph L. Mueller of the Women's Auxiliary to the National Assn. of Master Plumbers, concerning the auxiliary's proposed "Field of Honor," to contain names of all members' relatives in the armed forces:

"Has everyone been approached in regard to sending in the names of relatives serving in the Armed Forces? Mrs. E. D. Hornbrook thought up the wonderful idea of having a 'Field of Honor' for the relatives of auxiliary members and asked me to serve as the registrar. Mother Hornbrook personally sent out quite a few requests, but whether or not every auxiliary has been contacted I do not know, and as the names are coming in rather slowly and only two or three states have complied with the request, I was wondering whether some auxiliary may have been overlooked.

"We do not want to slight anyone and therefore after the first of the year I personally will get in touch with each auxiliary president to make sure that no one has been overlooked. If you have not yet sent in any lists, will you please start working on one? By relatives we do not mean only the sons, but also the husbands, brothers, nephews, sons-in-law and grandsons.

"If you have sent in the names of the sons, you can send in the other names any time between now and May 15, thus giving us plenty of time to get the list ready for the convention. Should any boys leave after that time, send the names just the same, and we will have them listed.

"Thanking you for giving this your immediate attention, I am,

Mrs. Joseph L. Mueller, Registrar,
2169 N. 62nd Street,
Wauwatosa, Wis."

Yule Party

The Women's Auxiliary to the Master Plumbers Assn. of Philadelphia held its annual Christmas party the evening of December 3 at Red Men's Hall. During the business meeting, officers and directors for the coming year were nominated.

An offering was received for the "Smokes Fund" which the Master Plumbers use as their means of appreciation to the boys in the service. The offering amounted to $10 and was presented to Santa Claus and "her" aide.

Santa Claus, impersonated by Mrs. George Mauger, came following the regular meeting. She was accompanied by nine white gowned aides who carried lighted candles. Gifts were given to Pal Club members, after which there was a variety of games. The lunch room was decorated for the Christmas season.

Mrs. Louis Schrader was committee chairman, assisted by Mesdames H. Stillwell Sr., G. Hicks, E. Hendricks, A. Lentz, J. McStay, C. Kauffman, Mrs. Mauger, and Misses E. Jann and A. Craig.

Mrs. Herman Sievers

Mrs. Helen M. Sievers, wife of Herman Sievers, master plumber, died December 7 at her home in Austin, Chicago.

WATER ON TAP
VITAL TO SAFETY

KEEP 'EM PUMPING

Plenty of geniune UNIFLOW parts are available.

Write for spare parts lists

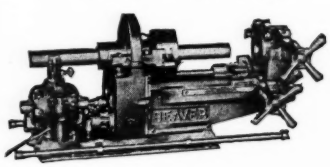
ELECTRIC PUMP BUILDERS
UNIFLOW
FOR 21 YEARS

SHALLOW, DEEP AND JET WATER PUMPS AND SYSTEMS

WATER SOFTENERS
CELLAR DRAINERS
IRON FILTERS

UNIFLOW MFG. CO., ERIE, PA.

The A-B-C of Pipe and Bolt Machines

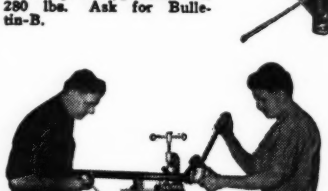


Beaver Model-A

A high-speed heavy-duty deluxe Pipe and Bolt Machine. Range ⅛ to 2-inch —up to 12-inch with geared tools and drive shaft. Bolts, ¼ to 2-inch. Wt. 415 lbs. Ask for Bulletin-A.

Beaver Model-B

A compact utility Pipe and Bolt Machine combining many features of Model-A with the easy portability of Model-C. Range ⅛ to 2-inch — up to 8-inch with drive shaft and geared tools. Bolts up to 1½-inch. Wt. 280 lbs. Ask for Bulletin-B.



Beaver Model-C

A sturdy little Power Unit

Converts Hand Pipe Tools into Power Tools from ⅛ to 8-inches. Threads 8-inch in 6 minutes. Threads bolts up to 1½-inch. Equipped with automatic chuck wrench ejector — a safety feature. Two men can use it at the same time without interference. Easily portable — weighs about 150 lbs. Write for Bulletin-C.

BEAVER PIPE TOOLS

A Complete Line — Hand and Power!

143 DOME AVE. WARREN, OHIO

News of Business . . . . .

$1,000,000,000 Market

- *Curtailment of plumbing and heating did not stop development of billion dollar market.*

Despite the fact that the year 1942 saw a drastic curtailment in the production of plumbing and heating items, and the plumbing and heating "freeze" order prohibited the sale of new plumbing and heating equipment which did not carry a priority rating of A-10 or better, preliminary estimates indicate that the total value of plumbing and heating installed during 1942 continued to "top" the billion-dollar mark.

According to eleven month figures from key wholesalers throughout the country, there was a decline in wholesaler sales of 14 per cent as compared with the like period of 1942. And, as has been the case throughout the year, the South Atlantic States continue to report the smallest decrease. For the 11-month period the South Atlantic States report a decrease of 2.6 per cent, whereas the largest decrease is reported by the New England States, with 40.1 per cent.

As is to be expected, the twelfth month of conflict finds war mobilization continuing to dominate the economic outlook. Manpower continues to rank as the number one economic problem, as employment in civilian industries continues to drop as materials are diverted and facilities are converted to war work.

It has been reported by the Department of Commerce that, despite 40 per cent higher income and excess profits taxes in 1942 as compared with the previous year, corporate net earnings for the first three quarters of 1942 were only 5 per cent below earnings for the same period last year. For the entire year 1942 corporate profits are estimated at 6.7 billion dollars, or 7 per cent less than the 7.2 billion dollars earned by corporations during 1941.

The physical volume of industrial production, as measured by the index of the Federal Reserve Board, will probably be more than 10 per cent greater in 1943 than it has been in 1942, but not more than 15 per cent greater.

National income, which will amount to about 112 billions in 1942, will probably be between 15 and 20 per cent greater next year.

Wholesale prices, which rose 11 per cent from 1940 to 1941, and 13 per cent from 1941 to 1942, are likely to advance by about four to six per cent from 1942 to 1943.

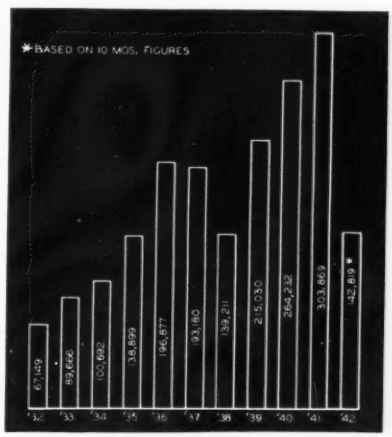
It is also estimated that production of bituminous coal in 1943 will probably be about five per cent greater than the production of 1942.

After careful review of current curtailment orders of WPB and of Government estimates for 1943 activity, it is the opinion of F. W. Dodge Corporation that construction contracts now indicated for 1943 should equal or better the volume of 1940—the latest year when peace-time activity was predominant.

It is indicated that there will be a 50 per cent decline in the total value of building contracts as compared with '42, a 47 per cent decline in heavy engineering contracts (public works and public utilities combined), and a decline of 49 per cent in total construction expenditures.

It is admitted that these percentage drops are drastic—but, they represent decline from the record construction volume of all time. Therefore, the estimated 1943 totals compare favorably with the 1920-1939 average figures and the figures for 1940, which was a year to which war construction contributed a relatively small proportion to the total. It is further stated that "the estimates are being made at a time when all emphasis is being placed on curtailment of construction. It is quite conceivable that the process of curtailment may squeeze out projects which will later prove essential and may not fully pro-

(Continued on Page 94)



Oil burner shipments for past ten years are charted above

Key Wholesalers

	% of change Nov. '42 over Nov. '41	% of change 1st 11 mos. '42 over 1st 11 mos. '41	Better	Same	Worse	No Comment	Total Reports
New England States	—43.0	—40.1	..	..	2	5	7
Middle Atlantic States	—37.6	—17.6	..	..	18	5	23
East North Central States	—37.9	—22.8	..	..	6	3	9
East South Central States	....	....	..	..	2	..	2
West North Central States	—39.1	—28.3	..	..	4	..	4
West South Central States	....	....	..	1	..	..	1
South Atlantic States	—20.4	—2.6	1	2	3	1	7
Mountain States	....	....	..	1	..	..	1
Pacific States	....	....	..	1	1	..	2
Total Reports	—32.2	—14.0	1	5	36	14	56

Shipments of Plumbing and Heating Equipment

	Oct., 1942	Oct., 1941	First 10 Mos., 1942	Percent of Change First 10 Mos., 1942 As Compared to First 10 Mos., 1941
Mechanical Stokers				
Classes 1, 2 and 3 for domestic, apartment and small commercial use				
Number of Units	5,548	22,888	80,062	—55.0
Oil Burners				
Number of Units	8,392	31,414	115,090	—55.8
Steel Boilers				
Number of Units	1,103	951	14,410	+15.2
Range Boilers				
Number of Units	37,111	73,988	451,388	—41.8
Domestic Water Systems				
Number of Units	12,321	24,835	159,743	—28.0

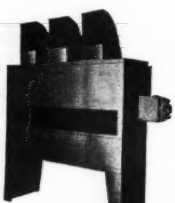
For Army-Navy Projects and War Industries

At this time The Herman Nelson Corporation is busy furnishing Heating, Ventilating and Air Conditioning Equipment for use everywhere in connection with work vital to our National War Effort. However, The Herman Nelson Corporation is maintaining Sales and Service Offices in all Principal Cities in order to help facilitate war work. Each office is equipped to quote and aid in working out details for your war project.

HERMAN NELSON hijet HEATERS

Horizontal Shaft Propeller-Fan Type hijet Heater projects warm air downward in the desired direction. Eliminates waste fuel and space. Available in 48 models, sizes and arrangements.

Herman Nelson Blower-Fan Type hijet Heater provides efficient heating of large areas. Streamline discharge outlets maintain large air delivery with high velocity. For floor, wall, ceiling, or inverted wall mounting. Available in 150 models, sizes and arrangements with a wide range of capacities.



AUTOVENT FANS AND BLOWERS

Autovent Propeller Fan. Exclusive Autovent design—direct or belt driven. Ruggedly constructed for economical operation under severe conditions. Available in wheel diameters from 9 to 54 inches; capacities 450 to 26,000 cfm

Autovent Blower for heavy duty ventilating and air conditioning installations. This Blower can be furnished to any speed or discharge requirements, in a wide range of sizes.

Sales and Service Offices in Following Principal Cities

Albuquerque, N. Mex.
Atlanta, Ga.
Baltimore, Md.
Birmingham, Ala.
Boston, Mass.
Buffalo, N. Y.
Charlotte, N. C.
Chicago, Ill.
Cincinnati, Ohio
Cleveland, Ohio
Columbus, Ohio
Dallas, Texas
Denver, Colo.
El Paso, Texas
Emporia, Kans.
Fort Wayne, Ind.
Grand Rapids, Mich.
Houston, Texas
Indianapolis, Ind.
Jackson, Miss.
Johnstown, Pa.
Kansas City, Mo.
Los Angeles, Calif.
Louisville, Ky.
Madison, Wis.
Memphis, Tenn.
Miami, Fla.
Milwaukee, Wis.
Minneapolis, Minn.
Missoula, Mont.
Moline, Ill.
Nashville, Tenn.
New Orleans, La.
New York City, N. Y.
Norfolk, Va.
Omaha, Neb.
Philadelphia, Pa.
Pittsburgh, Pa.
Portland, Maine
Richmond, Va.
Saginaw, Mich.
Salt Lake City, Utah
San Antonio, Texas
San Francisco, Calif.
Scranton, Pa.
Seattle, Wash.
Spokane, Wash.
St. Louis, Mo.
Syracuse, N. Y.
Tucson, Ariz.
Tulsa, Okla.
Washington, D. C.
Watervliet, N. Y.
Westfield, Mass.

THE HERMAN NELSON CORPORATION, MOLINE, ILLINOIS

Autovent Fan & Blower Division, Chicago, Illinois

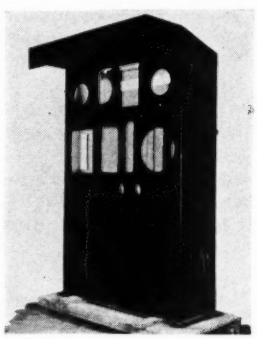
Manufacturers of Quality Heating, Ventilating and Air Conditioning Products

News of Products

Panels

In an effort to conserve sheet steel vital to war needs, these new instrument and control panels made of masonite, reinforced with steel angles, have been developed.

Listed Features: The body of the panel is made of cross grained masonite $\frac{5}{8}$ in. thick bolted to a framework of 3 by 3 angle steel. Braces of 2 by 2 angle steel reinforce the center of the panel to insure adequate support for the instruments and controllers. The canopy and doors are of cross-grained masonite $\frac{1}{16}$ in. thick. The masonite panels are said to have retained all

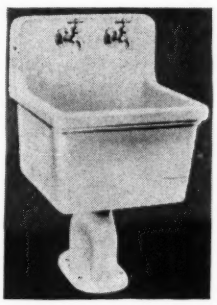


the features of their former line of steel panels, with each panel individually engineered to fit the job. Doors are conveniently located either at the rear or end of the panel, providing easy access to the rear of the instrument cases, terminal blocks and gage piping. The interior is illuminated to facilitate routine inspection. Because the masonite material is said to be exceedingly hard, it takes a black, soft velvety finish comparable to steel . . . with the inside finished in two coats of gray lacquer.

Manufactured by: The Hays Corporation, Michigan City, Ind.

Slop Sink

Made of carefully selected clays, fired at a high temperature with a layer of vitreous china glaze, this new nonmetal line was developed because of war restrictions on cast iron and pressed steel sanitary ware.



Listed Features: It is stated that the surface is not only brilliant and lustrous, but is stain and acid proof through and through. The white, glass-like surface is said to clean as easily as a china dish. It is further stated that the process by which it is made produces a durable, light body that will withstand thermal shock and will not crack. The slop sink shown here is for Army, Navy and industrial use.

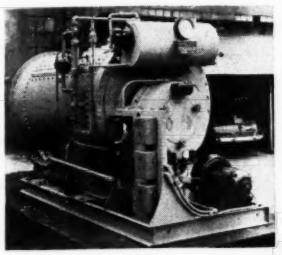
Manufactured by: General Ceramics Co., Metuchen, N. J.

Steam Generator

This Scotch-type steam generator, with forced recirculation (described as new to boilers of this size and type) is intended to reduce field work by the installer to an absolute minimum, and to provide a self-contained mobile unit, adjusted and tested by the manufacturer before shipment so as to perform efficiently at its rated capacity.

Listed Features: This steam generator, for steam working pressure up to 200 lbs. per sq. in., is of conventional design, mounted securely on a steel chassis . . . with all of the piping, auxiliaries and controls entirely contained within the dimensions of the chassis. Because it is designed with a forced recirculation furnace waterwall, it is stated that the positive and rapid flow of boiler water through the waterwall tubes permits the safe use of high furnace temperatures with a

resulting increased absorption of radiant heat. No stack or chimney are required for the unit.

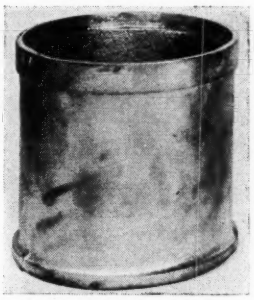


Availability: This item is available on Government and high priority orders.
Manufactured by: The International Boiler Works Co., East Stroudsburg, Pa.

Ferrules

In an effort to accomplish durable sanitary plumbing installations, with minimum use of critical materials, these hard lead calking ferrules have been developed and tested.

Listed Features: Of non-critical material, these ferrules can be welded or wiped to lead pipe. It is further stated that they are amply strong and rigid to stand calking into cast-iron pipe with either lead wool or poured lead. It is also pointed out that these ferrules, to be made in two, three and four inch sizes, have been tested and found satisfactory at pressures exceeding those encountered in



required plumbing tests. Because lead is unrestricted for plumbing use, the Association points out, these ferrules, combined with lead pipe, traps and bends, etc., can be the means of conserving large amounts of more crit-

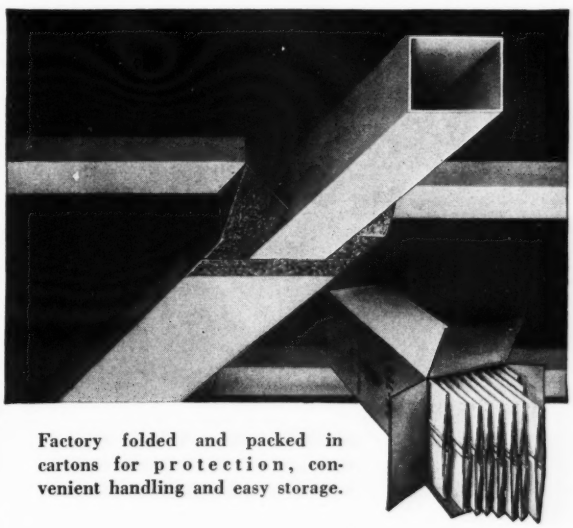
QUIET MAY

The trouble-free dependability of Quiet May oil burners demonstrates the kind of engineering that has gone into their design and manufacture. Quiet May's engineers are now working to help win the war. When peace comes, they will again devote their skill to keeping American homes *more* comfortable . . . for *less*. May Oil Burner Corporation, Baltimore, Maryland.

● OIL BURNERS

S-S-D
SAL-MO SUPPLY DUCT

NEW NON-METALLIC MATERIAL FOR SUPPLY AND RETURN DUCTS



Factory folded and packed in cartons for protection, convenient handling and easy storage.

APPROVED AND LISTED BY UNDERWRITER'S LABORATORIES, INC.

SAL-MO Supply Duct (S-S-D) is the new conduit material for constructing both supply and return ducts for warm air heating, ventilating and air conditioning systems. It saves metal, permitting many installations that would otherwise be impossible because of the metal shortage.

Ducts, both supply and return, made from S-S-D are safe, insulated and fuel saving. Leading independent laboratories, including Underwriter's Laboratories, Inc. have proved that S-S-D possesses a wide margin of safety.

S-S-D is factory fabricated and packed in cartons for ease in handling, shipping and storing. Saves time in erection.

Available for prompt shipment in any quantity, and in a complete range of sizes for domestic and industrial requirements. It is also furnished in flat sheets.

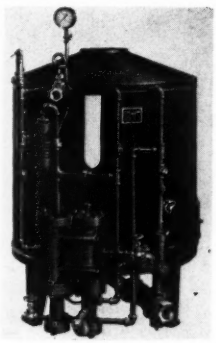
See Your Jobber or Write to—

SALL MOUNTAIN COMPANY
176 West Adams Street Dept. G2 Chicago, Ill.

ical metals, as well as expediting sound construction by avoiding priority delays.
Announced by: Lead Industries Association, 420 Lexington Ave., New York City.

Steam Generator

Because of its small space requirements, light weight, and extreme simplicity, this steam generator is said to be ideally adaptable for all installations — stationary, mobile, or marine.



Listed Features: A new principle of water feeding, incorporating an automatic jet control system automatically and without the use of thermostats or motor driven pumps, furnishes feed water in direct proportion to the amount which is drawn off as steam. **Manufactured by:** Super Mold Corporation of California, Lodi, Calif.

Fountain

This crystal vitreous china drinking fountain is proving popular in cantonment work, as well as in parks, public and industrial buildings.
Listed Features: The fittings on this drinking fountain include a nozzle with an automatic regulator . . . a strainer . . . a 1¼ in. iron "P" trap . . . and a ⅜ in. shut-off stop. The width of the fountain is 11 in. with the projection from the wall being 11½ in. Made to conform with Government specifications, this particular item is said to be ideal for the master plumber who is going after wartime installations.
Manufactured by: Eljer Co., Ford City, Pa.

OUR RESOLUTION

. . . for the New Year!

★ ★ ★

The hands of America are clasped across the country on the production front—and on foreign shores where our boys are on the fighting front. UNITED WE STAND! Never have those three words been more significant than they are today, at the outset of 1943.

The firm resolution of everyone at Dick Brothers is to KEEP PRODUCING for our nation's armed forces. *That's* how we prefer to Remember Pearl Harbor. And at the same time we'll do all in our power to serve our customer friends. *That's* how we prefer to Remember Them!

FIRST QUALITY PLUMBING BRASS GOODS SINCE 1897

DICK BROTHERS, INC.
READING, PA.

Leak-Proof Joints are quickly made up with Key Graphite Paste. It is the ideal sealer for thread and gasket connections on all lines to carry oil, gasoline and other petroleum products, and high-pressure steam.

Key Paste has no equal on sealing worn and battered fittings, as well as new. It expands when heated—packs up under pressure to fill out all irregularities . . economical to use—requires only water for thinning.

Get acquainted with all the advantages of Key Paste—

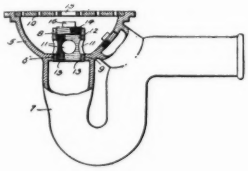
Send For FREE Sample. You can test Key Graphite Paste in actual service at no cost. Write for a liberal free sample, today.

KEY COMPANY
2681 McCasland Avenue East St. Louis, Ill.

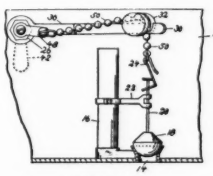
News of Patents

2,298,551. Back Water Valve. Russell F. Davisson, Tulsa, Okla.

2,304,512. Toilet Flushing Mechanism. Walter Stanley, Chicago, Ill., assignor to Catherine Stanley, Chicago, Ill.

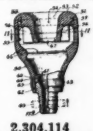


2,298,551
BACK WATER VALVE



2,304,512
TOILET FLUSHING MECHANISM

2,304,609
PIPE FITTING

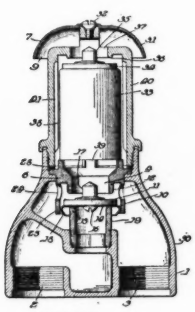


2,304,114
FAUCET ATTACHMENT OR COUPLING

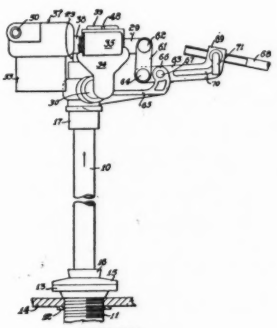
2,304,609. Pipe Fitting. Jasper D. Stokes, Joliet, Ill.

2,304,114. Faucet Attachment or Coupling. Charles O. Moore, Chicago, Ill.

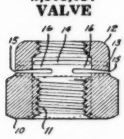
2,303,037. Valve. Edward A. Fredrickson, Chicago, Ill., assignor to Crane Co., Chicago, Ill.



2,303,037
VALVE



2,304,272
BALL COCK



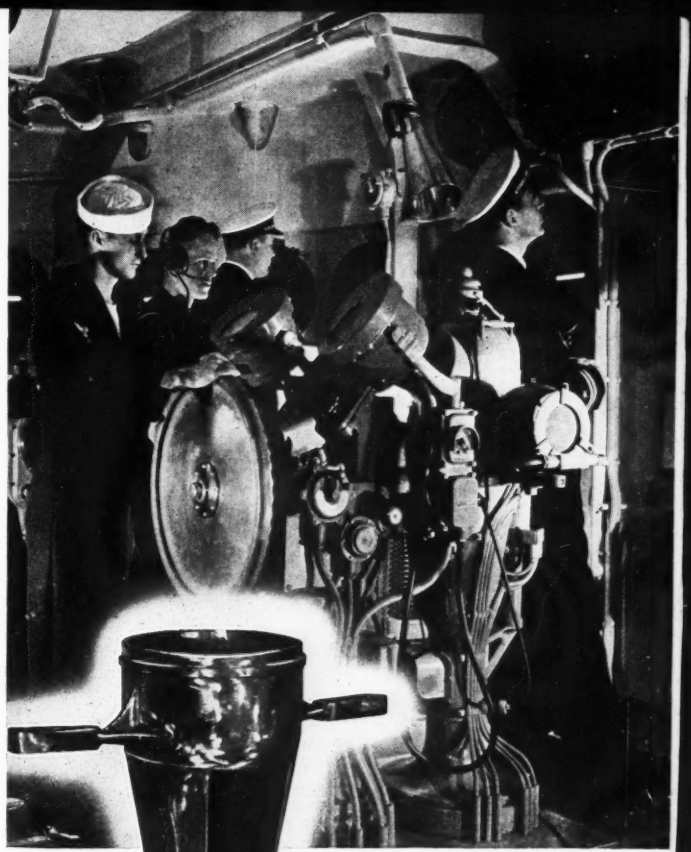
2,304,310
THREAD LOCKING DEVICE

2,303,478
SHOWER HEAD

2,304,272. Ball Cock. Theodore E. Mueller and Robert C. Boyd, Louisville, Ky., assignors to American Radiator & Standard Sanitary Corp.

2,304,310. Thread Locking Device. Richard W. Luce. Southport, Conn.

2,303,478. Shower Head. Edward S. McLean, Wilmington, Del., assignor to Speakman Co., Wilmington, Del.



OFFICIAL U. S. NAVY PHOTOGR

HUNTING JAPS in the Pacific!

Binnacles that direct our fighting ships in this global war, would in peacetime be shimmering, distinctive Salter Fixtures. Through the sacrifices of civilians and the plumbing industry, this precious brass is today helping bring Victory ever closer.

To you, we report that the success of Salter skill and craftsmanship in producing these vital binnacle parts (one of which requires the brass of 235 lavatory faucets) will be reflected in an even greater line of Salter Fixtures to meet the post-war building era ahead. To this end and Victory, Salter's war experience and expansion are dedicated.

H. B. Salter MFG. CO.
MARYSVILLE, OHIO

Masterpieces in Brass

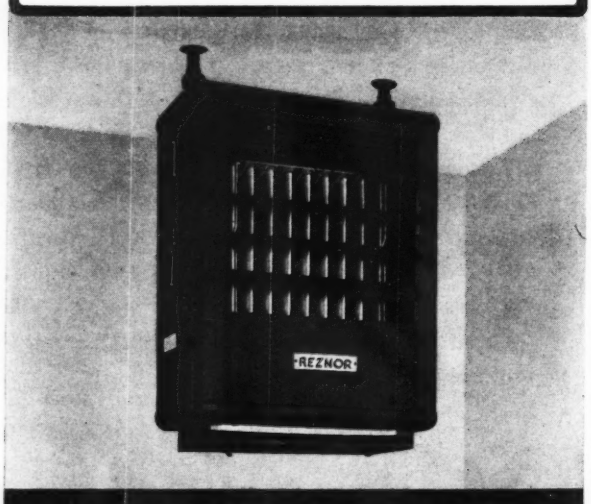
REZNOR

GAS FIRED UNIT HEATERS FOR INDUSTRY . . . .

THEY MAY BE INSTALLED QUICKLY AND YOU GET LOTS OF HEAT . . .

SINCE GAS is used for fuel, Reznor Unit Heaters are self-contained heating plants. You may install this type system more quickly than any other, THUS SAVING 89% IN VITAL, HARD-TO-GET MATERIALS. Operating from a suspended position, Reznor Units deliver more heat over wider areas, due to Reznor's special heat exchanger tubes. Write today.

REZNOR MANUFACTURING CO.
300 JAMES STREET, MERCER, PENNA.



"GAS HEATERS EXCLUSIVELY SINCE 1888"

News of Sales Aids

Calendar-Poster

Type of Literature: A calendar-poster for 1943, on the face of which are illustrations of water systems, pumps, etc.

Purpose: The manufacturer feels that because most of the dealers and distributors have taken pumps off demonstrator tanks to fill orders, these dealers and distributors should prominently display the calendar. **Listed Features:** This calendar and poster, the first edition of which was mailed to the trade more than fifty years ago, tells a story with illustrations of hand and windmill pumps, water systems and many others. **Availability:** Copies are available on request to dealers and distributors. **Issued by:** The F. E. Myers & Bro. Co., Ashland, Ohio.

Cutting Oil

Type of Literature: A small, two-color circular. **Purpose:** Tells how this cutting oil for threading pipe saves time and tools. **Listed Features:** Especially stressed is the fact that **there is no drip,** as this oil is said to "stick to the job and stays where needed." It further states that because

DRAFT-A-JUSTOR

Now hand-in-hand with Uncle Sam

TO CONSERVE FUEL!

Government restricting orders on the use of fuel this winter increase more than ever the importance of a DRAFT-A-JUSTOR to home owners . . . as well as to industrial plants. To assure the most efficient, the most economical fuel consumption possible . . . to effect fuel savings of from 10 to 20% . . . it is essential that every oil burner today be equipped with a DRAFT-A-JUSTOR!

Stove, Domestic and Commercial sizes from 5" to 24" in diameter. Industrial sizes from 24"x24" to 4'x12'.

Once you point out how a DRAFT-A-JUSTOR assures BALANCED COMBUSTION and pays for itself many times over in one heating season . . . you'll make a sale every time! Every DRAFT-A-JUSTOR installation means a BOOST for the Government's fuel conservation program . . . a BOON to your customer's fuel efficiency . . . and a profit BONUS for you! Write for literature and prices.

PREFERRED UTILITIES MFG. CORP.
33 West 60th St., New York, N. Y. Boston Office: 839 Beacon St.

of its patented process of holding active and undissolved sulphur in suspension, it reduces heat, prevents metal seizure, and prolongs the life of tools and dies. Available in three varying densities, the advantages of each are given as to their particular application — the No. 1 oil is for hand cutting and threading, the No. 2 for power driven threading and cutting machines, and the third is a fluid type of oil, with a sulphur base, transparent on work and was developed for power driven and automatic machines. Also included is a price list for each type. **Issued by:** Sulflo, Inc., 1143 E. Jersey St., Elizabeth, N. J.

Boilers

Type of Literature: (1) a personalized mailing piece conveying a message of continued helpful cooperation, (2) a 17 by 21 in. instruction chart to be hung on boiler room walls, and (3) a reprint of an advertisement entitled "File Until V-Year." **Purpose:** To remind the industry that the company wants to cooperate in the war-time period, as well as the fact that it is thinking of the post-war period. **Listed Features:** The material is intended to remind its customers that they are still making boilers and willing to cooperate, despite the inability to fill other than priority orders. The instruction chart entitled "Instructions for Care and Operation" has been designed so that it can be hung on the boiler room wall as a constant reminder of the importance of properly caring for and operating heating equipment. The reprint of the advertisement is edited to convey the idea that the company is thinking and planning for an all-out return to normal when conditions again warrant the manufacture of materials for civilian needs. **Issued by:** Fitzgibbons Boiler Co., Inc., 101 Park Ave., New York City.

Post-War Planning

Type of Literature: A four-page black and white reprint

In the service

Tuthill Pumps and Fuelstats have gone to war.

Obviously, normal requirements can not be filled, but we are doing everything possible to keep Tuthill equipment, now in the field, operating at peak efficiency. Repairs and reconditioning are provided through our authorized service stations or at the factory.

TUTHILL PUMPS ARE SERVING ARMY • NAVY AIR FORCE MERCHANT MARINE

Tuthill PUMP COMPANY

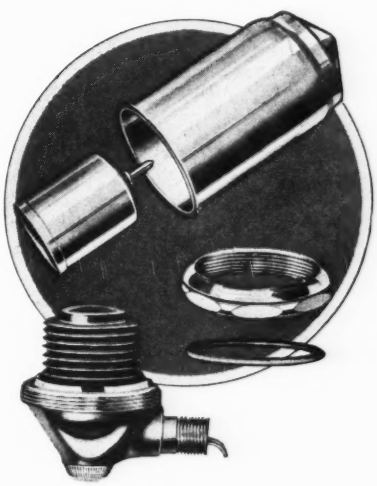
939 East 95th Street • Chicago, Illinois

ANDERSON

was Ready

WITH THE

VENT-RITE



Repairable Valve

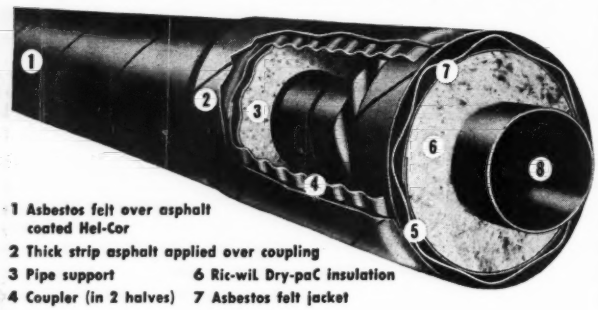
In devising a valve that could be returned to the factory for the replacement of worn-out parts, Anderson not only performed the greatest war-time service to the heating industry, but also once again demonstrated its foresight, and the ability to pioneer which has kept Anderson products at all times on dealers preferred lists.

ANDERSON PRODUCTS INC.

17 Tudor Street, Cambridge, Mass.

Buy U.S. War Bonds and Stamps

SPEED ON UNDERGROUND • PIPING JOBS! •



1 Asbestos felt over asphalt coated Hel-Cor
2 Thick strip asphalt applied over coupling
3 Pipe support
4 Coupler (in 2 halves)
5 Air space
6 Ric-wiL Dry-paC insulation
7 Asbestos felt jacket
8 Steam pipe

In building up our vast system of men and armaments, Ric-wiL is proud to have a vital part. To put more steam behind the war effort, steam supply lines themselves are needed, not by the foot but by the mile. Ric-wiL Insulated Pipe Units make available efficient steam pipe systems, for underground or overhead use, with a new kind of *speed,* because we do in the factory most of the work that formerly had to be done on the job.

For 33 years Ric-wiL has specialized in underground steam conduit. Now, for the Army, for the Navy, for war industry generally—Ric-wiL is working harder, in order that others may fight better.

For full information on complete Pre-Fabricated Insulated Pipe Units, and other types of Ric-wiL Conduit Systems, write for catalog.

RIC-WIL INSULATED PIPE UNITS
THE RIC-WIL CO., CLEVELAND, O.
Agents in Principal Cities

THE DUNHAM *Victory Line*
VAPOR AND VACUUM HEATING SPECIALTIES

Operating Engineers will approve this new Dunham line of cast iron specialties built to meet Government specifications for the duration.

Cover and disc assemblies of traps are interchangeable with Dunham standard traps. The radiator valve is spring packed (known to the trade as "packless"), has non-rising stem with indicator. Descriptive bulletin of the Line gladly sent upon request.

"Dunham Heating Service" is available through the telephone to more than 60 cities, or by correspondence to C. A. Dunham Co., 450 E. Ohio St., Chicago.

DUNHAM HEATING SERVICE

of an advertisement entitled, "Is It Not Logical to Prepare Now to Develop the Opportunities Which Peace May Offer you?" **Purpose:** This advertisement was published to stimulate post-war planning for the development of local areas. **Listed Features:** Emphasizing the need for research and planning by all sizes of cities and towns . . . it suggests that government agencies, private industry, and organized labor cooperate to produce post-war prosperity and security. It tells how their engineers are researching, inventing and designing to meet new needs that urban reconstruction will require. Included, also, are illustrations of various plumbing drainage products such as cleanouts, floor drains, oil intercepting drains, backwater sewer valves, etc. **Issued by:** J. A. Zurn Mfg. Co., Erie, Pa.

Plumbing Fixtures

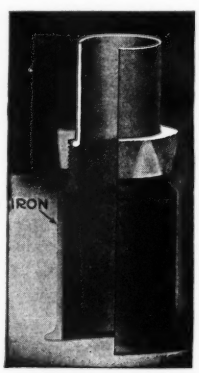
Type of Literature: A 10 in. by 12 in. sheet with numerous illustrations. **Listed Features:** This circular has illustrations of its line of vitreous china lavatories and closets—with measurements on each particular type given below the illustration. Also, information is given on the advantages of this line of fixtures—that is, they are said to be beautiful . . . durable . . . and easy to keep clean. Included are illustrations of a square front lavatory, a corner lavatory, a round front lavatory, vitreous china basin, sink and tray combination, and many others. **Issued by:** Eljer Co., Ford City, Pa.

Ball Cock

Type of Literature: An illustrated circular describing a new cast iron ball cock. **Purpose:** Describes the merits of this new ball cock and emphasizes that, because it eliminates the use of critical materials, should be of great help to the industry today. **Listed Features:** This new product is described in detail . . . with its various advantages being listed, such as efficiency in operation, han-

STRONG

Where STRENGTH Counts MOST!



- NO BREAKAGE!
- NO LOST MOTION!
- NO LOST TIME!

Pipe jobs that assure the most lasting connections are those on which ATHOL Brass Ferrules, Unions, and Union Ferrules are installed. Made of job-tested, first-quality metals . . . accurately machined to close tolerances and uniform sizes . . . individually inspected before shipment . . . ATHOL Ferrules reduce losses from misfits and breakage and stand up under years of service. With war production needs so acute, these savings are particularly important now.

When you specify ATHOL . . . you assure your customer lasting satisfaction . . . you protect your reputation as a Master Plumber . . . and you conserve manpower and materials for winning the war! Prove these savings on your jobs! Place a trial order with your plumbing supply house today!

DEPENDABLE ATHOL

Also Mfgr's of Dexter Valve Reseating Machines.

ATHOL *Brass Ferrules, Unions and Union Ferrules*
A SIZE AND TYPE FOR EVERY JOB
THE LEAVITT MACHINE CO., ORANGE, MASS.

dling of both high and low pressures without adjustment, a solid glass valve plunger which is said to insure against "flooding," a flexible refill tube that will not break or rust away, etc. Further, due to the use of permissible materials, prompt deliveries are said to be assured despite war emergency. Also shown are cross-sections of the ball cock. **Issued by:** Nigg Engineering Co., 545 N. 2nd St., Covina, Calif.

Cleaner

Type of Literature: A mailing piece, with return postcard on which the contractor is requested to send (a) the number of gallons of fuel oil consumed up to January, (b) the No. of the fuel oil used, and (3) the number of gallons of chemical liquid solvent needed for his customers. **Purpose:** To make its service to customers more completely satisfactory. **Listed Features:** It gives suggestions for oil conservation—for example, it tells how one way to save fuel oil is to get more heat units more consistently from the oil burned, and that this factor, added to careful handling, will effect enormous oil savings. It further states that this chemical solvent eliminates trouble caused by carbon in oil heating units and from sludge in fuel oil tank and pipe lines. **Issued by:** Maxfal Chemical Co., 33 W. 42nd St., New York City.

Laboratory Equipment

Type of Literature: An 8½ by 11 in. bulletin No. 498, entitled "Laboratory Equipment." **Listed Features:** Information contained in this bulletin pertains particularly to the manufacturer's line of laboratory equipment.

Also included is technical data with diagrams and dimension tables on its line of acid-proof pipe and pipe fittings, acid-proof traps, and ventilating equipment. Finally, the bulletin has descriptions, with accompanying illustrations, of acid-proof paint, ventilating pipe, fans and exhausters, etc. **Issued by:** The United States Stoneware Co., 60 E. 42nd St., New York City.

"DUCK BILL"
helping to teach
Hitler the Goose Step

ROCKFORD BRASS WORKS
ROCKFORD, ILLINOIS
The Complete Line of
"Plumbing Brass Goods Since 1890"

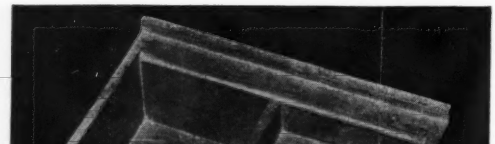
BLEMISH REMOVERS NOT WANTED...
...nor needed!

• The paint can plays no part in the manufacture of K cast iron fittings. K surfaces are smooth and free from imperfections without the application of any "blemish-removing" paint.

• To make surfaces this smooth, of course, is no easy matter. This feature, plus K fitting strength, accuracy, and uniformity, is the result of close and constant manufacturing control... with every worker given authority to reject a piece for even small flaws.

• Specify the fittings that make up easily, pull tight, and *stay* tight... *specify K's.*
Kuhns Bros. Co., Dayton, Ohio.

K
INSPECTED FITTINGS
STANDARD AND SPECIAL CAST IRON FITTINGS TO 24"
Combined marketing facilities on both "K" cast-iron fittings and M.I.F. malleables. Complete stocks at both Dayton, Ohio, and Branford, Conn.



ALBERENE STONE
TRAY and SINK COMBINATION
for SMALL HOMES

Alberene Stone is *not a critical material.* The new Tray and Sink Combination was designed to meet the demand for a practical, 42″ long, moderate-priced unit which could be supplied promptly. Non-absorbing and non-staining, Alberene is ideal for laundry trays, pantry and kitchen sinks, slop sinks. Special sinks can be made to any dimensions to fill any desired spaces. Write today for details and prices on the *new* Tray and Sink Combination.

ALBERENE STONE CORP. OF VIRGINIA
419 Fourth Avenue, New York, N. Y.
Quarries and Mills at Schuyler, Va.

Year's Business . . .

(Continued from Page 85)

vide for all the new needs that may arise during 1943. In particular, war housing needs are considerably greater than the figures shown in the estimates. While it is doubtful whether all the housing desired for in-migrant workers will be provided, there will be a constant pressure of new requirements demanding new allocations of materials for housing purposes. No relaxation of restrictions on non-war building is likely.

It is further felt that in general, the number of very large projects is apt to be small in 1943, as compared with the huge projects of 1941 and 1942. The bulk of the year's program will consist of moderate-sized projects; relatively few large industrial plants, cantonments, bases and supply depots; many new units added for expanding existing large projects.

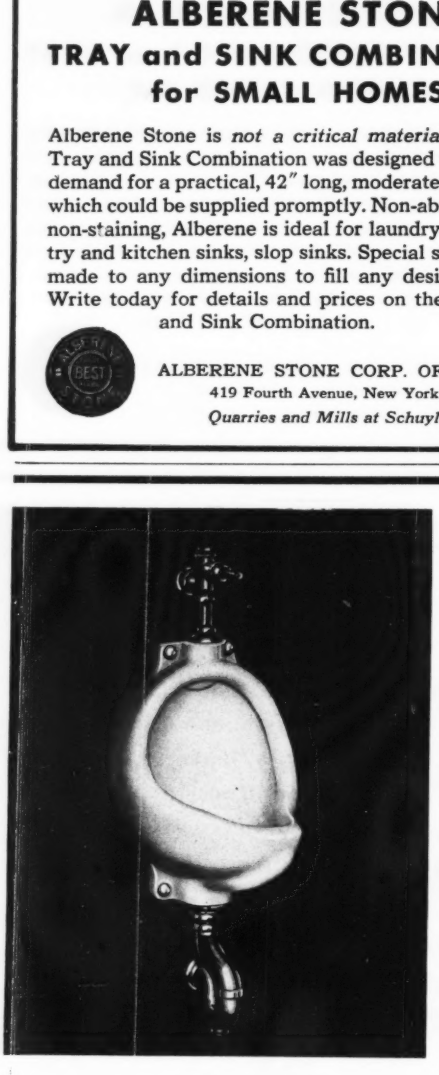
Year's Building . . .

(Continued from Page 35)

The 1942 construction total is the largest in history, despite marked reduction in private construction because of WPB restrictions. Military and naval and government-financed industrial plant construction, more than doubled over 1941. The peak was reached in the July-September quarter when more than $4,000 million of construction was put in place.

War construction will taper off in 1943, but continue in substantial volume until mid-year, after which a sharper decline is expected. Publicly-financed construction is expected to be as high as 85 per cent of the total, whereas it was little more than 50 per cent in 1941 and only 40 per cent in 1939. All categories of private construction will decline further in 1943, including war housing.

The estimates given do not include maintenance and repair which have been averaging about $3,000 million dollars per year. Shortage of building products requiring critical materials and stringencies in the labor supply in some localities, may retard certain items of building maintenance; yet other factors will operate to uphold the previous repair volume,



☆ ☆ ☆

VITREOUS *China Wall* **URINAL**

☆ ☆ ☆

G-801 *Pennton* Flat Back Wall Urinal with extended lip, integral flushing rim and integral china strainer. ¾″ top inlet spud—1½″ bottom outlet spud. Can be installed singly or in batteries.

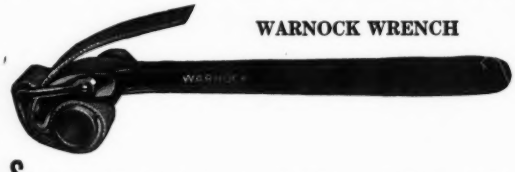
Height ..... 19½″
Width ..... 13¾″
Wall to front ..... 13″

This fixture conforms with Government Specification E-WW-P-541a and War Department Specification PE-623.

ABINGDON SANITARY MFG. CO.
ABINGDON, ILL.

PROTECT the FINISH of FINISHED PIPE!

WARNOCK WRENCH



SMOOTH piping needs greatest protection against injury during threading and installation! This type of work calls for a WARNOCK Strap Wrench . . . the wrench that takes a sure but gentle grip on pipe. Flexible Woven Strap provides a soft contact yet has a tensile strength of 2,000 lbs. Curving nose prevents denting. Unbreakable handles are finished in enamel.

Obtain the WARNOCK Wrench if you have a volume of smooth piping work or the WARNOCK Simplex Wrench if you have infrequent use for a strap wrench.

Place an order today with your wholesaler for one or several WARNOCK Strap Wrenches.

WARNOCK SIMPLEX WRENCH

WARNOCK MFG. CO., Worcester, Mass.

or even to increase it. WPB in November authorized the top priority rating of AA-1 to essential repair and maintenance to productive facilities, utilities and housing. Under the new Controlled Materials Plan war contractors are instructed to submit estimates of critical materials needed for maintenance separately from what is needed for new construction or production operations. WPB further has removed the limitations on construction work using nonmetallic materials and equipment which conserves fuel, including insulation and heating conversion. Thus there is hope for a substantial market for maintenance and repair service providing work for the smaller and specialized contractors

Residential construction, estimated at slightly in excess of $2,000 million in 1942, may decline as much as 46 per cent in 1943 in spite of the unsatisfied demand for housing accommodations for war workers. Privately-financed war housing may decline a greater percentage. This reduction is attributed to the policy of diverting materials and labor to other war uses. Apparently any resulting housing shortage will be met by more intensive use of existing structures. Major dependence for single in-migrant war workers is now being placed upon rooms in existing residences, of which there is reputed a present surplus in some war centers. Additional accommodations where needed, are being provided in temporary war dormitories.

The National Housing Agency last fall stepped up the importance of its conversion program. Existing residences, and even commercial properties, are being leased by the HOLC and converted at government expense into apartments for war workers and their families. NHA recently announced liberalization of the lease contract, and has made it possible for real estate brokers to collect commissions from property owners for handling the lease transaction. It hopes that this will provide the incentive for brokers to find suitable properties.

While plant construction will drop off in 1943 it will still be in substantial volume compared to pre-war years. Practically all plant expansion in 1943 will be for the government account. The prevailing type will be the processing plant, such as for synthetic rubber and high octane gasoline.

Construction on the farm is estimated to decline somewhat in 1943 because of WPB

When the load will be tough, specify

Filtrine COOLERS

for Dependable Service

You won't go wrong! Wherever *cooled* water is needed—in mess halls, cafeterias, war plants, on government projects—there is a Filtrine Cooler for the job. Filtrine Coolers have been tested and proved. They handle average and peak loads dependably and all have large storage capacities.

SPECIFY FILTRINE FILTERS TOO, because they get down to fine points and remove the finest particles of suspended matter from the water. The filter medium, when saturated, is easily replaced in a minute or two, but the filter itself lasts a lifetime. For foolproof filtering of water in photographic laboratories and in industry generally, specify Filtrine Filters and be sure!

Write today for further information regarding FILTRINE FILTERS, FILTRINE COOLERS or both.

Filtrine
MANUFACTURING COMPANY
53 Lexington Ave., Brooklyn, N.Y.

MYERS handy REPAIR KIT

Sell this Profit Item
FITS WARTIME CONDITIONS PERFECTLY

For All MYERS PLUNGER TYPE SHALLOW WELL PUMPS AND WATER SYSTEMS AND DOUBLE ACTING CYLINDERS

THE MYERS HANDY REPAIR KIT contains all the repairs necessary to replace those parts of the pump which are subject to wear.

Enables Pump and Water System owners to handle simple repairs themselves, thereby reducing service calls that needlessly consume the dealer's time—wear out tires and actually cost the dealer money.

This free booklet on the care and maintenance of pumps and water systems helps your customers make their own minor repairs—eliminating "needless" service calls. Covers all makes of pumps. It promotes the sale of the Myers Repair Kit and directs pump owners to you for parts and repairs. Free in reasonable quantities to all pump and water system dealers.

Take Off Your Hat To The MYERS
PUMPS · WATER SYSTEMS · HAY TOOLS · DOOR HANGERS

Write for sample copy

The F. E. MYERS & BRO. CO.
118 Fourth St. · Ashland, Ohio
PUMPS · WATER SYSTEMS · SPRAYERS · HAY TOOLS · DOOR HANGERS

Windmill
SKY CREWS
Needed Immediately

How many windmill wheels are gone with the wind in your territory? Dozens of towers are standing idle, with crumpled vanes or no wheel at all. Here is your chance to speed up Food for Victory production . . . help win the war and earn extra income on the side. Why not make a lightning checkup of all windmill towers in your vicinity? Baker will supply Monitor wheels and repair parts wherever humanly possible. If a farmer no longer needs his tower, it can be erected for someone who does. Every idle well should be repaired. Let the world know your Monitor SKY CREW is equipped to start the farm heart pumping again.

Monitor
SKY POWER WINDMILLS

WINDMILLS • PUMPS • PUMPJACKS • HAND PUMPS • WELL SUPPLIES

DISTRIBUTED BY
BAKER MFG. CO.: Minneapolis, Minn.; Madison, Wis.; Fort Dodge, Ia.; Cedar Rapids, Ia.; Fredericksburg, Ia.; Omaha, Neb.; Kansas City, Mo.; Enid, Okla.; Hutchinson, Kan.; Brandon, Manitoba, Canada.
AXTELL CO.: Fort Worth, Texas; Amarillo, Texas; Lubbock, Texas; San Angelo, Texas.
BAKER MFG. CO., EVANSVILLE, WIS.

restrictions and in spite of higher farm income. It is expected that necessary provision will be made for essential farm buildings to support the expanded food production program.

In concluding its report, the committee expresses the opinion that although the supply of certain non-metallic building materials may exceed the 1943 needs of war construction, developing shortages in manpower and transportation make it unlikely that there will be any relaxation of current restrictions on new civilian construction. Presumably construction workers released by the declining war construction program, estimated by government sources as high as one million workers, will be absorbed for the most part in shipbuilding or other production, except as the maintenance and conversion program will utilize them.

Legal Questions

The following discussion of legal problems concerns cases which have come before courts and the decisions of these courts are presented here for the general guidance, only, of members of our industry. Domestic Engineering is not permitted to give legal advice in specific problems nor to supplant the services of an attorney.—Ed.

As pointed out in the last series of articles on legal matters, the courts have ruled that if an owner receives any benefit from services rendered by a contractor, the law reasonably implies a promise of the owner to pay actually the amount that the services are reasonably worth.

In one case the court ruled as follows:

"The jurisprudence of this State is that a contractor who has delivered his work to the owner may sue him when he has received it and is in the enjoyment of it; and that the contractor may recover the value of the work which has been of benefit to the owner, although the work be defective or unfinished; if a price has been agreed upon the remedy of the owner is a reduction thereof to an amount necessary to perfect or to complete the work according to contract."

On the other hand, it is important to know that where a contractor wilfully refuses to remedy the situation he cannot recover any payment.

For illustration, in a recent case, it was disclosed that a

4 STAR
Kampa Plastics

Kampa Plastic Plumbing Parts represent a complete package of plumbing items. They are available at a time when conventional materials are difficult to obtain. . . . Each Kampa part is a definite development and improvement in plumbing application. . . . Kampa Plastic Plumbing Parts replace critical material. They are available for immediate delivery. Each part packed in convenient display cartons.

FLOATS DRAIN STOPPERS FLUSH ELBOWS FLUSH BALLS SEAT BUMPERS

KAMPA MFG. CO.
Plastics Fabrication
12132 W. CAPITOL DRIVE · MILWAUKEE, WIS.

NEVER HARDENS...
PIPES ALWAYS EASY TO DISJOIN

Rutland is the Pipe Joint Cement that master plumbers swear by—not at. It seals joints tightly — lasts indefinitely. Saves money because more bulk per pound. Legal for use in all cities because no toxic ingredients. Remains soft in can. Does not stain hands or fixtures.

Mail post card for free sample. Rutland Fire Clay Co., Dept. D-13, Rutland, Vt. Also makers of Rutland Retort Cement, Furnace Cement, Asphalt Paint, Concrete Patcher.

contractor sued a theater owner to recover $1,759.88, the balance due under a contract, under the terms of which the contractor agreed to install an air conditioning system in the theater. The contract price was $8,200, of which the theater owner paid, in installments, $6,440.12, leaving the balance.

The theater owner contended, and offered evidence to show, that the system did not operate as guaranteed, that it was defective and that it would cost $1,431 to perfect it.

However, the contractor contended he fully performed but, if not, he substantially performed his part of the contract and that he was, therefore, entitled to at least a verdict for the difference between the balance due and what the jury should determine was the cost of perfecting the system, under the equitable doctrine of substantial performance.

However, evidence was introduced proving that the plaintiff (contractor) knew exactly what was required to perfect the system and though some of the minor complaints were adjusted he made no effort to remedy others, particularly the automatic controls which were definitely imperfect. Therefore, the higher court refused to allow the contractor any recovery, and said:

"There was ample evidence from which the jury could find plaintiff's failure to complete the job was wilful. A finding by the jury that plaintiff (contractor) had substantially performed would have entitled him to a verdict for the balance due, less an allowance for the cost of completing the performance, if the jury had not also found its failure wilful. It is pretty severe doctrine that any conscious deviation from the contract, of however slight importance, is fatal to recovery upon it."

The higher courts consistently have held that a contractor always is entitled to recover damages where the owner breaches a contract. A legal breach of a contract on the part of the owner is any act in violation to the implied or expressed terms of the construction contract.

For instance, in one example, the court records show that an owner and a contractor entered into a contract. After the contractor had partly completed his work the owner discharged the contractor and authorized another contractor to perform the work.

Some time later, the original contractor filed suit contending that the owner had illegally cancelled the contract. In this suit, the higher court held this contractor entitled to recover the contract price of $11,625, less $7,000 he had received on account, and also less $2,000 which the owner paid to the other contractor to complete the work. This court said:

"Where a contractor has partly performed an entire contract, and is prevented from completing performance by the act of the other party or by the law, he may recover in an action on the contract, and the measure of his damages is the contract price, less the reasonable cost of completing the work . . . These profits are measured by 'the total price promised less the cost of completing the work'; such measure will put the contractor 'in as good a position as he would have been in had there been no breach' . . ."

In many instances plumbing, heating, and air conditioning contractors have difficulty in collecting for work performed and materials supplied when it is discovered after the contract is completed that another holds a prior lien, as a mortgage, on the building. Therefore, we shall review the laws on this subject.

First, it is important to know that a contractor has prior rights against a person who holds a mortgage on property in which the equipment is installed, providing the contractor installed the equipment **before** he had legal notice of the mortgage, or before the mortgage was properly recorded.

For example, it was disclosed recently that the owner of a building contracted with a contractor for the installation of certain heating apparatus consisting of a hot air furnace, registers and accessories incidental thereto. The contract contained an important clause which provided that the contractor was permitted to remove the equipment from the building in the event the owner failed to make the agreed payments.

Before the job was completed, the owner mortgaged the property but did not inform the contractor of this act. Soon afterward, the owner of the building defaulted in making the agreed payments to the contractor who immediately removed the furnace and other parts of the heating equipment from the building.

The holder of the mortgage, after learning that the contractor had removed the equipment from the building, filed suit against the contractor to compel him to reinstall the furnace and all accessories on the ground that the contractor was without legal authority to remove the equipment after the owner had given a mortgage on the property. However, since the mortgage was not recorded until after the contractor had

Your neighborhood sure needs you now!

"I'm phoning to tell you, Mr. Plumber, how much the wife and I appreciated your help in our recent dilemma."

WAR TIME restrictions on the ready availability of plumbing fixtures and materials result in an ever increasing dependence by property owners upon your skill and ingenuity. Your repair and maintenance business is, or should be, more extensive now than ever before—if you are alert to your community's needs. And, as you know, there are ratings under which faucet sales and installations are permissible under the rules of the War Production Board.

All deliveries are subject to the rules and regulations of the War Production Board, Division of Priorities.

Now, more than ever, it is important that you install Chicago Faucets when available in such circumstances. For Chicago Faucets are lifetime faucets, easy and inexpensive to maintain in perfect operating order.

THE CHICAGO FAUCET CO.
2712 N. Crawford Ave., Chicago

CHICAGO FAUCETS
Last as Long as the Building

No More Damage from Condensation or Sweating Pipes, Tanks, Walls, Ceilings and Air Ducts

A SURE CURE

NoDrip ● This sensational plastic cork coating prevents condensation drip from metal, concrete, brick, wood, plaster or composition. Permanently protects metal against rust and corrosion, thus prolonging life of pipes, tanks, etc. Forms a moisture-proof, insulation type coating impervious to acid and alkali.

Stucco-like finish requires no maintenance and can be painted any color. A gallon covers about 30 feet of 1" O.D. pipe. Comes in 1, 5 and 55 gallon drums.

Immediate Shipment. Order from your Supply House. Write for **NoDrip Handbook.**

J. W. MORTELL CO.
Technical Coatings Since 1895
504 Burch St. Kankakee, Illinois

KENNEDY

RADIATOR VALVES

made in every type for steam or hot water

Sturdily built . . . specially strong stems and handwheels. Well machined . . . operate easily, close tightly, and have clean, accurate threading. Attractively proportioned and finished. Obtainable from your supply house. Fully described in the Kennedy Catalog . . . copy on request.

THE KENNEDY VALVE MFG. CO.
ELMIRA, N. Y.

removed the equipment, the court held the right of the contractor superior to that of the mortgage or the holder of the mortgage, and said:

"The conditional sale agreement was valid between the purchaser and the defendant (contractor). The purchaser defaulted in payment and requested the defendant (contractor) to remove the apparatus and it was removed before the mortgage to the plaintiff (mortgagee) was recorded and before the defendant (contractor) had notice of the mortgage . . . Under the circumstances disclosed the mortgage was not valid as against the defendant (contractor) at the time the heating apparatus was removed, and by removing it the defendant violated no duty it owed the plaintiff."

On the other hand, all contractors should realize that a conditional contract of this nature is void if before making the installation a properly recorded mortgage is in existence.

Another situation that all contractors should avoid relates to the method utilized in attaching the plumbing, heating or air conditioning equipment to the building.

For example, it is well established law that a "legal fixture" is anything permanently attached to real property in such a manner that its removal will damage the building. Although a contractor has a mortgage or a lien on such fixtures, he is not entitled to remove it from the real estate unless he has permission from both the owner and the holder of the other lien.

In one case it was shown that the owner of property engaged a contractor to install the heating and plumbing work on a new house. The plumbing and heating appliances, although ordinarily removable without substantial damage to the building, were wrought into and securely attached to the real estate.

The contractor failed to collect the agreed contract price payment from the owner for certain reasons, not the fault of the contractor; therefore, the contractor began removing the appliances from the building. The holder of a first mortgage on the property filed suit to prevent removal of the equipment by the contractor on the contention that the plumbing and heating equipment were "legal fixtures." In upholding this contention, the court said:

"The plumbing and heating material, having been wrought into and attached to the real estate, a finding was justified that as between the mortgage on the real estate and the conditional vender they became a part of the real estate and the title to them passed to the mortgage. The fact that these articles could be removed without substantial damage to the building did not deprive the mortgage of the right to hold them as a part of the real estate if they were wrought into and attached to the building."

Generally, a contract is void which is impossible to perform; also, a contract is void which has an illegal object. This is so because the courts will adopt a strict rule which will require the contracting parties to foresee the consequences as accurately as possible, though at the expense of serious hardship to one of them if unforeseen circumstances render it impossible to perform his promise. Generally, giving an excuse under such circumstances does not relieve the contractor.

Also, in a late case it was shown that a city ordinance prohibiting the operation of a theater within 200 feet of a church was enforceable. A contractor contracted to demolish an old building and construct a theater and furnish plumbing, heating and air conditioning, on a lot only a few feet from a church. The legal question presented the higher court was: How can this ordinance, which only forbids the producing of moving picture entertainment in this location if, as and when such entertainment is offered, render illegal a contract for the demolition of an old building and the construction of a new one?

In holding the contract void and unenforceable by either the owner or the contractor, the court said:

"The contract for the construction and operation of the building being in violation of the ordinance, was unenforceable."

On the other hand, it is established law that while the **mere fact** that performance of a contract is made more difficult and expensive **than the parties anticipated when the contract was made** will **not** ordinarily excuse the contractor.

In order that a contractor shall be relieved from liability for his failure to complete a contract in accordance with its provisions, it must be shown that the owner and the contractor mutually agreed to revise the original contract; or that the owner did something illegal to prevent or interfere with the contractor; or that an Act of God, as an impossibility, arose over which the contractor had no control. For example, if a wind storm, or fire or earthquake damages or destroys the building in which the contractor was to install equipment, both the contractor and the owner may be relieved from further obligations. And, also, it has been held that when through war

regulations a contractor cannot obtain materials, he is relieved providing he made the contract before the Government regulations restricting the sale of materials were in effect. In fact, the contractor always is relieved from the obligations of fulfilling the requirements of a contract if any situation arises over which he has no control and which results in impossibility of completing the contract.

CMP . . .

(Continued from Page 58)

pany choose to operate under PRP until that time? Until that date, may it refuse to make application or to receive allotments under CMP?

Answer: The short answer to this question is "No." Whether a company or a plant will operate under PRP or under CMP or both is governed by administrative regulations as they are approved and issued. Continued operation under PRP during the transition period is provided for not as an alternative to CMP but as assurance against maladjustment while problems of transition are being resolved.

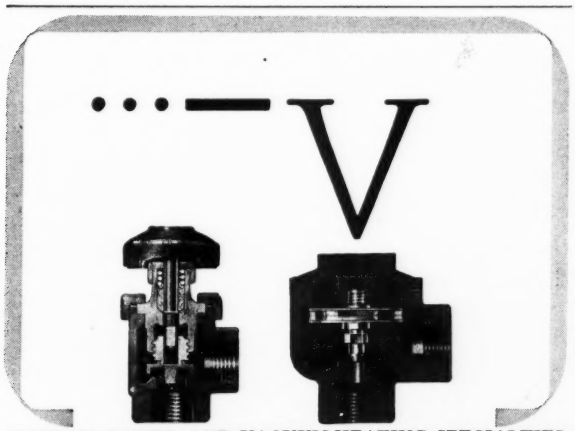
During the transition period many companies will of necessity receive materials on two different bases: The one in terms of allotments and authorized preference ratings, received either directly from a claimant agency or from a WPB industry division or indirectly through prime consumers, and the other, in authorizations to purchase under PRP. The company must certify that requests on one basis are not duplicated on the other.

Grate Prices

Washington, D. C., Dec. 24.—Specific dollars and cents maximum prices at all levels of distribution were established by the Office of Price Administration today for from 30,000 to 40,000 metal fireplace grates being produced under a special War Production Board order designed to help relieve the fuel oil shortage.

Two orders were issued by OPA, one covering cast iron grates, the other for grates made of welded scrap iron or steel.

Because of the pressing need for auxiliary heating equip-

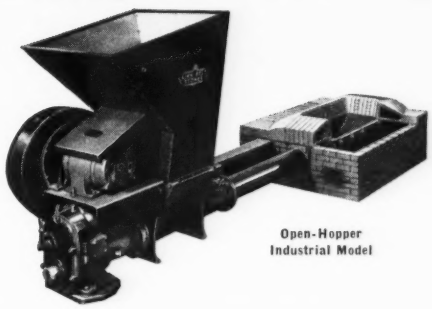


ILLINOIS VAPOR AND VACUUM HEATING SPECIALTIES conserve steam—and in their wartime, iron-bodied dress, conserve critical metals too. They differ only in outside construction. All of the proved dependable, efficient performance features on the inside remain the same. Valves and traps are all furnished in angle pattern. Female inlet and outlet connections with left hand thread at inlet. Series GW Traps are made in three sizes—200 sq. ft. to 750 sq. ft. EDR nominal rating. Series 40W Valves are made in two sizes—¾ inch and 1 inch.

ILLINOIS STEAM POWER SPECIALTIES are controlling steam circulation, pressures and temperatures for heating and process work in war production all over America. Perhaps we can help with your steam handling problem too. Consult us on your requirements or write for bulletins.

ILLINOIS ENGINEERING COMPANY
INCORPORATED 1900
RACINE AVENUE AT 21ST STREET • CHICAGO

LINK-BELT
THE SYMBOL OF QUALITY LINK-BELT COMPANY
AUTOMATIC COAL STOKERS



Open-Hopper Industrial Model

•OPEN-HOPPER INDUSTRIAL MODELS: Available in all sizes up to 300 B.H.P. for bituminous coal.

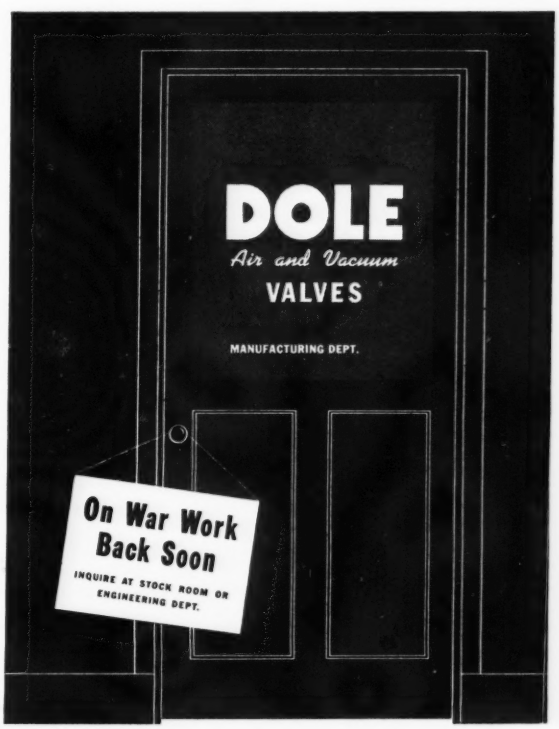
•CLOSED-HOPPER COMMERCIAL MODELS: Available in a wide range of sizes.

•DOMESTIC BITUMINOUS AND ANTHRACITE MODELS: Manufacture restricted during this emergency, but we are looking forward to that day when we shall again be permitted to build in the volume required.

Our service departments will continue to maintain proper service facilities. Write for particulars.

9006

LINK-BELT COMPANY, *2410 W. 18th St., Chicago*



THE DOLE VALVE COMPANY
1901-41 Carroll Avenue, Chicago, Ill.
REPRESENTATIVES IN PRINCIPAL CITIES

FLEXIBLES

Operated either by HAND OR MOTOR

There is a FLEXIBLE tool especially made to do every pipe-cleaning job quicker and better.

Now, with skilled help difficult to get, plumbers need tools that save both labor and time.

ASK FOR CATALOG

showing the most complete line of all kinds of pipe-cleaning tools.

WRITE FOR YOUR COPY TODAY

FLEXIBLE
Sewer Rod Equipment Co.
9059 Venice Blvd., Los Angeles, California
Pickwick Bldg. - - Kansas City
401 Broadway - - - - New York

ment, particularly in New England, WPB has authorized temporary manufacture of cast iron or welded scrap iron or steel fireplace grates from Dec. 21, 1942, through Jan. 6, 1943. Each grate is limited to 30 pounds maximum weight.

Both OPA orders are temporary, effective at once, and expire April 1, 1943. The orders are issued under Maximum Price Regulation No. 188 (Manufacturer's Maximum Prices for Specified Building Materials and Consumers' Goods Other Than Apparel), and under the General Maximum Price Regulation.

In Order No. 103 under Section 1499.158 of Maximum Price Regulation No. 188, prices on cast iron grates are established at approximately 12 cents per pound of cast iron used, on sales by manufacturer to the dealer. On sales to consumers the prices approximate 23 cents per pound of cast iron in the grate. Factory to jobber and wholesale prices also are listed. Table of all prices for the cast iron grates follows:

Weight of Grate inclusive	Factory to Jobber Price	Factory to Retailer Price	Wholesale Price	Retail Price
28-30 Pounds	$2.90	$3.60	$3.80	$7.00
25-27 Pounds	2.60	3.25	3.45	6.25
22-24 Pounds	2.30	2.90	3.05	5.60
19-21 Pounds	2.00	2.50	2.65	4.85
15-18 Pounds	1.70	2.15	2.30	4.15

In Order No. 104, under the same regulation, on welded iron or steel scrap grates weighing between 26 and 30 pounds inclusive, maximum prices are established at $5 per grate for the manufacturer, $6.25 per grate for the wholesaler, and $10 per grate for the retailer.

This order will cover most of the welded iron or steel scrap grates expected to be made during the temporary period. Action will be taken later by OPA fixing maximum prices on any lighter grates made.

Because these grates follow no standard pattern of manufacture, a warranty requirement is included in the order on welded iron and steel scrap grates. Under it manufacturers warrant to the retailer and to any person buying from him that the grate is fit for burning coal or wood in a fireplace. If no warranty is

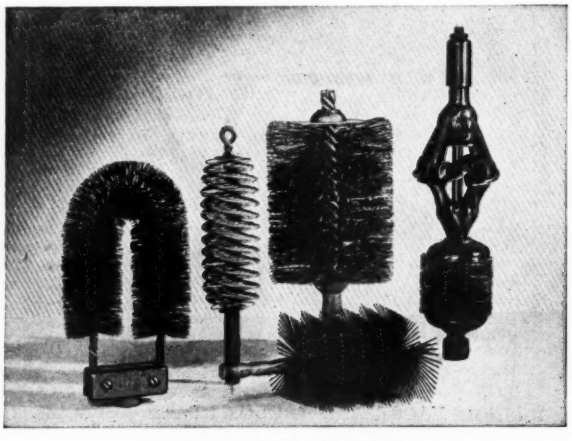
ASARCO TYPE K TUBE-LOY
and
GRINNELL SUPERSEAL FLARED TUBE-LOY FITTINGS

THE cutaway view, above, shows just a few of the many reasons for the popularity of these products: a leak-proof joint unaffected by vibration . . . a flare design which provides greater contact area between tubing and fitting . . . a fitting designed especially for Type K Tube-Loy. Add to these features: incomparable resistance to corrosion, ease of handling, simple installation *plus availability of both products for prompt delivery* and you have the answer to their wide and ever growing employment.

For additional information, write either company

AMERICAN SMELTING AND REFINING COMPANY
LEAD PRODUCTS DIVISION • 120 BROADWAY, NEW YORK

GRINNELL COMPANY, INC. • SUPERSEAL DIVISION • PROVIDENCE, R. I.



TEMPERED STEEL

Boiler Tube Cleaners
Flue Brushes — Wire
Heater Brushes—Handy
Cleaner Brushes — Fire
Brooms—Track Brooms

COMPLETE LINE

Worcester Brush & Scraper Co.
10 Austin Street, Worcester, Mass.

given, prices of manufacturers, wholesalers and retailers are 15 per cent less.

Both orders also require manufacturers to attach to their grates before delivery a tag or label plainly setting forth the retail ceiling price. The tag or label cannot be detached until the grate is delivered to the consumer.

Manufacturers must also notify their dealers in any convenient manner of the resale ceiling prices established.

Bluth's Statement

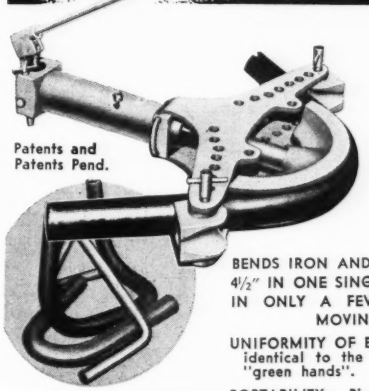
(Continued from Page 80)

It was not by accident that the stoker industry has been able to successfully meet demands for its products for use in industrial factories, institutions and homes from coast to coast. Mass production had been successfully applied to the manufacture of stokers—from the smallest water and home heating units to fairly good sized industrial machines. This had necessitated the employment and training of a small army of skilled installation and service mechanics with far-flung distribution and sales organizations maintained by numerous companies financially strong and capable of meeting the increasing demand for stoker equipment. And until late in 1941, the industry had consistently increased its volume of business with sales reaching 200,000 units in that year. In 1931, ten years before, stoker sales totaled 12,500 units; Nineteen forty-two sales will total approximately 100,000 units with the entire loss accounted for in residential size stokers.

FUEL CONSERVATION in war time is a prerequisite to successful accomplishment of all production for war and essential civilian requirements. Fuel is the foundation of American industry. America's fuel resources are abundant when compared with other nations, but the time in the history of this country has apparently arrived when conservation measures of permanency—not alone for the present emergency—become necessary.

The mechanical stoker has found its most productive and profitable markets in the industrial centers of the United States where bituminous coal (and anthracite to a limited degree) is consumed in great quantities, both industrially

TAL'S Prestal
HYDRAULIC PORTABLE



Patents and Patents Pend.

PIPE BENDER

- No Heating
- No Filling
- No Kinks
- No Wrinkles

BENDS IRON AND STEEL PIPE OF 3/8" TO 4½" IN ONE SINGLE SIMPLE OPERATION IN ONLY A FEW MINUTES WITHOUT MOVING THE PIPE

UNIFORMITY OF BENDS: The last bend is identical to the first, even if made by "green hands".

PORTABILITY: Pipe can be bent at the point of repair or installation. Few seconds to mount and dismount.

SAVES CRITICAL MATERIAL AND LABOR: Eliminates numerous elbows, fittings, thread cutting, etc. Fastest portable bender!

ADAPTABILITY: Quick changeover to various pipe sizes.

Bending formers of small radius for STEAM-FITTERS and PLUMBERS.

SMOOTHNESS OF BENDS: No wrinkles—no kinks—no fracture of pipe due to scientific development of bending formers. No job too complicated.

Obtainable in three different sizes.
Meets U. S. Navy, Army & Maritime Comm. Specifications.
Write today for circular giving complete description.

TAL'S PRESTAL BENDER, INC. Dept. DI Milwaukee, Wisconsin

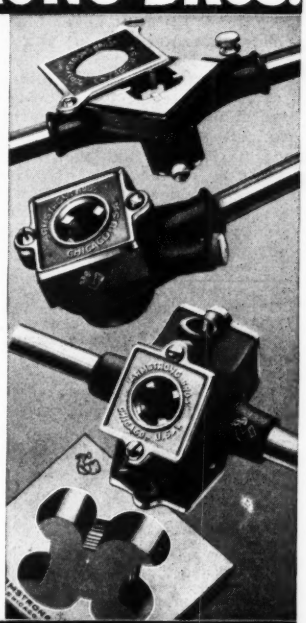
HYDRAULIC PORTABLE TAL'S PRESTAL

Look for the Arm-and-Hammer
ARMSTRONG BROS.

STOCKS & DIES

ARMSTRONG BROS. Stocks (10 types) are free from sharp angles and corners. They fit comfortably in the hand, are well balanced, are accurately machined. They come with Ring or Adjustable Pipe Guides. Take all standard make dies.

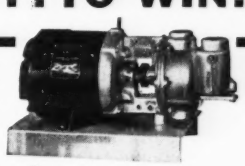
ARMSTRONG BROS. Solid Dies are cut by special machinery from Vanadium Tool Steel, "backed-off" hob-cut teeth with ground cutting edge, eliminates "drag." Carefully hardened, drawn, tempered and tested. Free-Cutting Top Rake. Ample Chip Clearance. They are long lived, and cut smooth, accurate threads and hold their sharpness.



Write for catalog.

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
323 N. FRANCISCO AVE. • CHICAGO, U. S. A.

BURKS PUMPS ON LAND AND SEA, ARE IN THE FIGHT . . . TO WIN!



BURKS Super Turbine Large Capacity Pump

On the nation's best fighting ships you'll find BURKS Pumps faithfully pumping Fresh Water for drinking, Salt Water for sanitary systems, for fire fighting and bilge pumping — and in many other ways BURKS Pumps help the Navy. You'll also find these dependable pumps in munitions plants, army camps, war ordnance plants, on the farms, and other vital places where good service is necessary. BURKS Pumps—thanks to the alertness of BURKS Dealers and Jobbers—are in the fight, on all fronts, to help win the war.

THE BURKS DEALER'S JOB, TODAY

As a BURKS Dealer or Jobber, investigate every navy or shipyard, war plant, army camp, munitions plant, every place where a BURKS Pump can help keep service men comfortable and safe and help increase production of vital supplies. We are ready to help you in every way possible, but all orders are taken through our regular dealer-jobber organization.

DECATUR PUMP COMPANY
33 Elk St. Decatur, Ill.

ACTS FAST AS LIGHTNING

The speedy toilet bowl cleanser that *deodorizes* and *disinfects* . . . instantly removes sulphur, lime, rust and pipe corrosion . . . keeps toilets shining and sanitary. Never fades or loses strength.

Now a fast seller on West Coast. Mid-West and Eastern Jobbers invited to introduce QUICKO in their territories. Write for complete details.

MOP FREE! WITH *Each* BOTTLE

Packed in case lots of 4 1-gal. or 12 12-oz. bottles.

On large orders jobber's name imprinted.

MANUFACTURED BY QUICKO COMPANY P. O. BOX 9036 LOS ANGELES, CALIF.

QUICKO

THE LIQUID TOILET BOWL CLEANER

Universal

Model No. 1000

New and Improved FLUSH TANK LEVER

SINGLE ACTION FITS ANY TANK

QUICKLY INSTALLED LOW PRICE

In **appearance, in assembly, in design,** the new UNIVERSAL flush-tank lever is streamlined for modern tank installations. All metal construction, corrosive resistant. Handle finished in white high-baked synthetic enamel. Over a half million in use.

CRAMPTON MFG. CO., HOLLAND, MICH.

N-DUR-O FAUCET WASHERS ★★★

Can Take It!

Yes they can! Three times as long as ordinary rubber washers. These synthetic rubber compound washers have all the strength, resiliency and toughness of natural rubber, along with greater resistance against live steam, heat, oil and age.

N-DUR-O Faucet Washers are ideal for all water faucet and repair jobs. Install them with complete confidence that they "can take it!" Ask your wholesaler for *free* test samples.

LAVELLE RUBBER CO. 424 North Wood St. CHICAGO

We're in Fighting Trim

But when we win . . . . .

HINDLEY will again go to work to supply you with the kind of plumbing specialties that have saved you time and labor in the past. War work is absorbing our facilities right now but there will come a day . . . a day when all our skill and manufacturing precision will again be turned to producing the materials that help you do your job better, quicker, and more efficiently. Until then, keep us in mind.

HINDLEY MFG. CO. VALLEY FALLS, R. I.

and for space heating purposes. The stoker industry has naturally concentrated its efforts in those markets where abundant supplies of lower cost bituminous coal was and is the natural fuel for practically all purposes. Surveys made by the Stoker Manufacturers Assn. late in 1941 showed that the great industrial states of Illinois, Indiana, Michigan, Wisconsin, Ohio and Pennsylvania, accounted for a major portion of stoker installations, and these same states are the great consuming centers of bituminous coal. Concentration of sales and installations in other centers are also disclosed in these surveys, but not nearly as concentrated in a relatively small area as the states named above. These same states are also served with natural and manufactured gas and fuel oil, as are some of the eastern and southern states where important industries are located.

However, with the present war demand for fuel oil and gas reaching astronomical figures, it is incumbent upon the coal industry to supply the fuel for expanded war production purposes as well as to replace millions of barrels of fuel oil and possibly natural gas in certain and isolated sections.

Water Systems

(Continued from Page 52)

time and to make each call relatively more profitable.

Most common fault which he encounters is improper sizing—too small in most cases, unnecessarily large in others. Another frequent cause of trouble is speed too great for capacity of motor—an error of special importance now when electrical equipment is extremely critical.

Because of the great number of potential water systems service customers, Mr. Buch manages to keep extremely busy every day and most evenings. The labor shortage is apparent in his operations right now. At one time he employed eight men and had four trucks. Now he does service work himself and has only two men.

This contrast between normal times and the present period, in Mr. Buch's operations, illustrates three principles of great interest to all plumbing and heating contractors: (1) Overhead must be made flexible so that the business can operate at a profit even on reduced volume. (2) To realize a profit on repair and maintenance work, the contractor must get a fair price. (3) To get a fair price, his materials and workmanship must be outstanding. Mr. Buch has observed these three principles so successfully that he is able to operate his business in the black even when he has little but labor and experience to sell.

Mr. Buch entered the plumbing and heating industry 30 years ago. First he sold hot water heating systems—which were then coming into vogue in the area—for his father-in-law. After he had sold a score of such jobs, he then helped to install them. Upon the retirement of his father-in-law, Mr. Buch then took over the business which is now known as H. E. Buch & Son.

Throughout the years the company has taken on the sale of all plumbing and heating equipment and many appliances, for example—boiler-and-radiator heating systems, winter air conditioning, oil burners, stokers, gas ranges, refrigerators and washing machines.

Except in the town itself, however, all of the company's plumbing sales and installations are based upon one product—electric water system. In

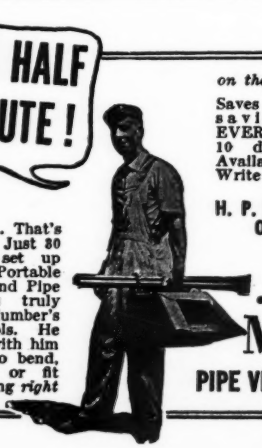
JUST A HALF A MINUTE!

on the job!

Saves man-hours by saving minutes on EVERY job! Sold on 10 day trial basis. Available in 2 sizes. Write for details.

H. P. MARTIN & SONS Owensboro, Ky.

Yes sir! . . . That's all it takes! Just 30 seconds to set up MARTIN'S Portable Vise Stand and Pipe Bender. It's truly one of the Plumber's handiest tools. He can take it with him and use it to bend, thread, cut, or fit pipe and tubing *right*



...It's a MARTIN PIPE VISE & BENDER!

one job illustrated by accompanying photographs, the pump sale made possible the sale of an electric water heater, a modern home laundry, a basement bar, a complete kitchen and two bathrooms. Leaving nothing to chance, Mr. Buch also handled the heating and wiring contract.

This job illustrates one reason why Mr. Buch is vitally interested in satisfying his water service customers. It illustrates one reason why, nowadays, he takes a personal responsibility in seeing that water systems are kept in operation for the duration.

The second reason is, of course, his realization that running water is needed to raise the food to win the war and write the peace.

Pipe Insulation

(Continued from Page 69)

on the fittings should be well sealed to the outer layer of 15 lb rag felt on the pipe insulation.

Hangers should be insulated separately the same as fittings, running the insulation along the supporting hanger rod a distance of not less than 12 inches beyond the adjacent pipe insulation.

The following recommendations cover the type of finish that should be applied to pipe and fittings. After the second outer layor of 15 lb rag felt has been mopped with asbestos and applied, the insulation should be protected with a jacket of No. 28 gauge galvanized sheet metal or with 55 lb roofing felt. (See Fig. 1). If sheet metal is used each sheet shall be lapped 3 in. against the weather at all joints and permanently secured in place with ½ in. galvanized iron bands spaced on 8 in. to 12 in. centers, machine stretched and crimped. If roofing felt is used as a jacket, all joints should be lapped as above and the jacket permanently secured in place with ½ in. galvanized bands or with copper or soft galvanized wires spaced on 6 in. to 8 in. centers.

Valves, flanges and fittings should be finished in one of the following manners (1) A layer of 1 in. galvanized wire mesh netting should be tightly stretched over the final layer of 15 lb rag felt and secured in place with No. 18 gauge wire. Emulsified asphalt weather-proofing should then be applied at the rate of 2 lb per square foot of area (approximately ¼ in. thick wet), trowelling it well into the wire mesh netting. Or (2) A layer of rosin-sized sheathing paper should be applied over the final layer of 15 lb rag felt, lapping it 3 in. at all joints and sealing the laps with asphalt. A jacket of 8 ounce canvas should then be sewed or pasted over the rosin-sized paper. If sewed, the stitches should be spaced not less than three to the inch, located where least visible.

When specified, the insulation finished with weather-proofing should be painted with aluminum or asphalt-base paint; insulation finished with canvas should be given a coat of glue sizing followed by two coats of white lead in oil, tinted to color.

Heat's Off

(Continued from Page 60)

on the second floor, including the bathroom radiator of 10 sq ft, it leaves the amount of bedroom radiation as 180 sq ft — 10 sq ft or 170 sq ft. 180 sq ft — 10 sq ft or 170 sq ft In zero weather, with these radiators working to their full capacity, they will deliver into the bedrooms

170 sq ft × 240 Btu or 40,800

Since this is for a 70 degree temperature difference between the inside and outside, the Btu lost from the bedrooms per degree difference between the inside and outside will be.

40,800 Btu/70 deg or 583 Btu per deg difference.

The rooms on the first floor being kept at 70 degrees will transmit some of their heat through the ceiling and into the bedrooms. The co-efficient for a lath and plaster ceiling on the first floor, with a double wood floor on the second floor is 0.24 Btu per sq ft per hr per deg temp diff, and the area of the first floor ceiling is

33 ft × 20 ft. or 660 sq ft.

But allowing some 60 sq ft for the bathroom on the second floor, this leaves

660 sq ft — 60 sq ft or a net of 600 sq ft

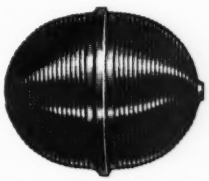
of bedroom and hall floor through which heat is being transmitted from the first floor into the second floor. For each degree of temperature difference between the first floor and the second floor bedrooms, then, the amount of heat transmitted will be

600 sq ft × 0.24 Btu or 144 Btu per hour.

If we allow "X" to represent the bedroom temperature at zero outside, it is evident that

70 deg — X will equal the

We've got a full supply of AMERICAN "Everlast" PLASTIC TANK FLOATS-- FLUSH ELBOWS



2 sizes: 4"x5" and 3⅛"x4½".

That means A-1 jobs. You can *count on* these tough, durable, leak-proof, corrosion-proof units for most satisfactory *service!*

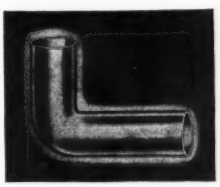
Better Floats Better Elbows

Protect entire installation. Float weighs only 2½ oz. Compare *that* with others of shatterable material weighing nearly a pound. What a relief AMERICAN means to rods and ball cocks!

CONTRACTORS: Order from your supply houses.

JOBBERS: Send for samples and prices. American Molded is constantly expanding its line. Write for details.

ORIGINATORS AND PIONEERS OF PLASTIC PLUMBING FITTINGS.



Molded one-piece.
4 sizes: 2"x4"x6", 2"x5"x7", 2"x6"x8", 2"x8"x10".

AMERICAN MOLDED PRODUCTS SALES CO.
1752 N. HONORE ST. CHICAGO, ILL.

WRITE FOR CATALOG DZ-1042 TELLING ALL ABOUT THE NEW SCV PUMP FOR CLEAR LIQUID SERVICE

Economy
TYPE SCV PUMP

- Medium priced
- Compact
- Quiet
- Durable
- Widely adaptable
- Amazingly efficient

Economy
SUMP PUMPS
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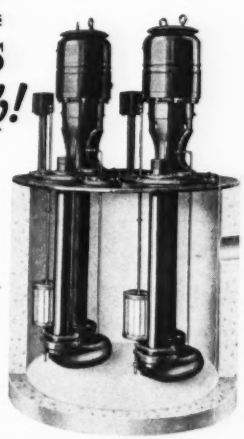
ECONOMY Sump Pumps have established excellent performance and maintenance records in handling of domestic or industrial sewage, solids or pulpy materials. The exclusive non-clogging screenless type pictured is available in sizes to handle from 50 to 4000 G.P.M. Every feature is designed to facilitate the operation and performance of the ECONOMY Sump Pump. Let our engineers assist you in selecting the units that meet the individual requirements of your customers. Take advantage of this special consulting engineering service.



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temperature difference between the first floor and the bedrooms, while X — 0 deg will equal the temperature difference between the bedrooms and the outside. Then it also follows that

(70 deg — X) × 144 Btu must equal the heat received from the first floor while

(X — 0 deg) × 583 Btu must equal the heat lost to the outside from the bedrooms.

Since the bedrooms can only lose the same amount of heat as is being delivered into them through the first floor ceiling, it follows that these two equations must equal each other, or

(70 deg — X) × 144 Btu equals (X — 0 deg) × 583 Btu

or

10,080 — 144 X equals 583 X — 0

or

10,080 equals 583 X + 144 X

or

727 X equals 10,080

so

X equals 13.9 deg

and this is the temperature the bedrooms will assume on a zero day with the radiators shut off.

The heat loss from the bedrooms under this condition will be (13.9 deg — 0 deg) × 144 Btu or 8,078 Btu per hr., the slight difference resulting because the figure 13.9 deg is not carried out to the ultimate decimal result. It may be assumed, however, that these amounts are around 8,100 Btu.

It now is possible to plot a curve as shown in Fig. 1 from which the resultant bedroom temperature can be read for any outside temperature. In localities experiencing a minimum design temperature of zero the average outside temperature for the heating season is around 42 degrees. This average winter temperature line has been added on the chart. The Btu lines for loss from the bedrooms under two conditions are shown in Fig. 2. It will be seen that, for the average winter temperature, the average temperature in the bedrooms unheated will be 48 deg and the average heat loss under this condition will be about 3,260 Btu per hr while the average heat loss from the same bedrooms heated to 70 deg is shown to be about 16,300 Btu per hr.

But who wants to go to bed in a chilly room with the beds down to a temperature that may reach as low as 13.9 degrees? The answer, of course, is no one. But why not temper these rooms before going to bed? If the radiators in the bedrooms are turned on shortly before bedtime, the rooms can be brought up to a temperature in which it is comfortable to retire. This is especially true if the beds are opened up at the same time that the radiators are turned on. Assuming that this idea is being tried out, what and how long will be the added heat loss? With outside temperature of 40 to 60 deg one hour has been found more than sufficient; with 20 deg to 40 deg probably 2 hours would be required and with temperatures from 20 deg down to zero it might reach a maximum of three hours. Suppose an average time of two hours is taken for the entire heating season; then, with the radiators turned on an average of two hours per night before retiring, the heat used for this purpose would amount to

170 sq ft × 240 Btu or 40,800 Btu per hour at zero

and it will be assumed that although the room may be at 48 degrees at the beginning of the heating-up period, due to stolen heat from the first floor, under average winter conditions it will soon rise to nearly 70 degrees and that the radiator output will approximate 240 Btu per sq ft per hour. The first floor and bath having a total of 140 sq ft and 10 sq ft respectively will be supplying under normal winter outside temperature a total of

First Floor,
140 sq ft × 240 Btu × 28/70 or 13,440 Btu

Bath,
10 sq ft × 240 Btu × 28/70 or 960 Btu

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but under usual operation the first floor, second floor and bath with a total of 320 sq ft will be supplying
Normal Operation,

320 sq ft × 240 Btu × 28/70
or 30,720 Btu

The comparison of the two methods may now be set up as shown in Table I.

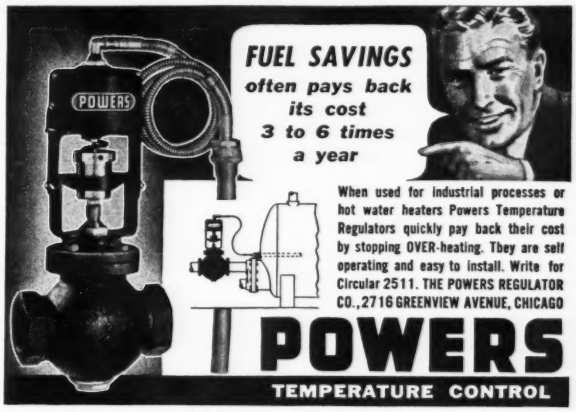
TABLE I

	Normal Method Btu per hr for 24 hrs	Proposed Method Btu per hour for 2 hr		22 hr
2nd Fl. — 170 sq ft	16,320	40,800		3,260
Bathroom— 10 sq ft	960	960		960
1st Fl. — 140 sq ft	13,440	12,480		12,480
Total Btu loss	30,720	54,240		16,700
multiplied by hrs oper.	× 24	× 2		× 22
	737,280	108,480	plus	367,400
Btu per day	737,280		475,880	
Saving	$\frac{(737,280 - 475,880)}{737,280}$	or 0.35 per cent		
Saving required by Rationing		33⅓ per cent		

TABLE II

Percentages of Savings Made by Varying Room Temperatures During Different Periods of the Twenty-four Hours

	Day Time 7 A.M.- 7 P.M. (12 hrs)	Evening 7 P.M.- 11 P.M. (4 hrs)	Night 11 P.M.- 7 A.M. (8 hrs)	
	A			
Original Temp.	70	70	70	
Changed to	70	70	65	
Saving				6.2%
	B			
Original Temp.	70	70	70	
Changed to	70	70	60	
Saving				12.5%
	C			
Original Temp.	70	70	70	
Changed to	65	70	65	
Saving				15.3%
	D			
Original Temp.	70	70	70	
Changed to	65	70	60	
Saving				21.8%
	E			
Original Temp.	70	70	60	
Changed to	65	70	60	
Saving				9.3%
	F			
Original Temp.	70	70	60	
Changed to	65	65	60	
Saving				23.4%
	G			
Original Temp.	70	70	60	
Changed to	65	65	50	
Saving				37.3%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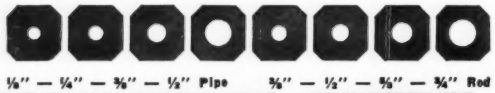

⅛" — ¼" — ⅜" — ½" Pipe ⅜" — ½" — ⅝" — ¾" Rod
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Fig. 123

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It should be noted that this is without making any changes or economies outside of leaving the bedrooms unheated except for an hour or so before retiring; a previous operation at 70 degrees of the entire house, day-and-night, during the previous year is assumed, however. If it had been the custom throughout the previous year to turn the temperature down at night to 65 degrees for period of approximately 8 hours, the oil consumption had been reduced an amount equal to 5 degree days × 1/3 of the day or 1.67 degree days per day. During a 200 day heating season this would amount to

1.67 d.d. × 200 days
or 334 d. d.

and with 5,350 degree days in the season when based on 70 degrees inside, the percentage of saving already made is

334 d. d. / 5,350 d. d.
or 6.2 per cent.

On this basis, Table 2 is illuminating. It shows what percentage of saving will accrue to the user when compared to different temperatures maintained previously. The table is divided into daytime, evening and night periods.

It should be noted in Table II that the changes in temperature must apply to the **entire** house. If the saving made by keeping the bedrooms unheated is to be considered, then any change in the temperature of the balance of the house would show savings only about ½ as much as shown in Table II since these savings would apply to only approximately half of the house. For example, if the bedrooms were not cut off, the savings would be as shown in Table II, but if the bedrooms are cut off, the savings would be as shown in Table I (35%) plus half of the savings shown in Table II. From this it seems that there are two methods by which the 1/3 reduction in oil consumption can be made

a. By cutting off the bedrooms as previously outlined;

b. By cutting down from a 70 degree day temperature and a 60 degree night temperature to a 65 degree day temperature and a 50 degree night temperature (G).

There is another question which may arise in the case where only a single room can be shut off from surrounding rooms, all of which must be heated. Assume for example a room 10 ft x 12 ft with the 10 ft side exposed and with two windows; the radiator has 22 sq ft. What saving could be made by operating this room as previously outlined for a bedroom

It is found by similar calculations that the room loses 75 Btu to the outside for each degree of temperature difference and gains 161 Btu from the inside partitions, ceiling and floor. By the same formula previously used, it is found that the lowest temperature which would occur in the room is 53 degrees due to the greater amount of warm partitions, etc. Plotting similar curves, it is found that at the average outside temperature during the heating season the room will be about 64 degrees. The room, normally at 70 degrees inside and 42 degrees outside, will lose

22 sq ft × 240 Btu × 28/70
or 2,112 Btu per hr.

while with the previously discussed method of operation the room would lose

(64 deg — 42 deg × 75 Btu
or 1,650 Btu per hr.

and when heating up

22 sq ft × 240 Btu or
5,280 Btu per hr.

Therefore the average loss for an average winter day under 70 degree normal operation would be

2,112 Btu × 24 hrs.
or 50,688 Btu per day

while with operation previously proposed it would be 5,280 Btu for 1 hr. or 5,280 Btu and

1,650 Btu for 23 hr. or
37,950 Btu
Total per day—43,230 Btu

Saving will be 50,688 Btu — 43,230 Btu or 7,458 Btu/50,688 Btu equals 14.7%

which applies only to the room considered.

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